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of the week's news on the orange-bordered editorial page.

THE IRON AGE

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GLEASON

SPIRAL BEVEL GEARS

SPIRAL BEVEL GEARS
Ratio 3 to 2

Ring gears of this design are dovetailed to hub.
For N— $\frac{1}{2}$ " use two Std. Dws. 41C5 ($\frac{1}{2}$ " x 1")
" " " " " " " " 41D9 ($\frac{3}{4}$ " x 1")

Spiral bevel gears may be obtained in either right or left hand combinations. For definitions of spiral angle, hand of spiral, thrust, etc., see booklet, "Spiral Bevel Gears." The letter "L" designates the gears, the letter "R" indicates a gear with right hand spiral and the letter "L" a gear with left hand spiral. The first column are for left hand combinations and the second column for right hand combinations. The symbols are altered only by the interposition of the letters "L" and "R".

*Ball bearing sizes are determined by the load given is based on steady load. Ball bearing manufacturers' specifications should be consulted for a low spiral angle of approximately 15°. The pinion is shown in the standard sheet.

Symbol	Teeth	Pitch	Face	Pitch	A	B	C	D	E	F	G	H	I	J	K	L
			in.	Diam.	inches	in.	inches	in.	in.	in.	inches	inches	inches	inches	in.	in.
1024AL16	16	10	$\frac{3}{8}$	1.600	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$1\frac{1}{8}$								
1016AR24	24			2.400	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$1\frac{1}{8}$								
824AL16	16	8	$\frac{9}{16}$	2.000	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$1\frac{1}{8}$								
816AR24	24			3.000	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$1\frac{1}{8}$								
724AL16	16	7	$\frac{11}{16}$	2.286	$2\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$								
716AR24	24			3.429	$2\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$								
624AL16	16	6	$\frac{11}{16}$	2.667	$2\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$								
616AR24	24			4.000	$2\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$								
630AL20	20	6	$\frac{1}{2}$	3.333	$3\frac{1}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{2}$								
524AL16	16	5	$\frac{13}{16}$	5.000	$2\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$								
516AR24	24			4.000	$2\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$								

Engineering Standards for Spiral Bevel Gears

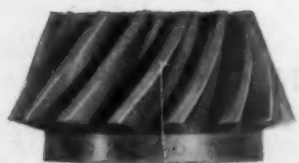
Our standard sheets may be used by
designers in making new machines and
gear trains.

Each pair of gears on these standard
sheets has the best possible design when
considered from a standpoint of tooth
form and section, and face length. Dif-
ferent types of housing and mountings
are shown. The sheets also show the
sizes for horse power to be transmitted.
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We will be very glad to furnish copies
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GLEASON WORKS

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THE IRON AGE

New York, July 1, 1926

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Industrial Situation in Russia

Engineer Finds Conditions Good and Promising, with
Favor for American Methods—Private Ownership
Increasing and Foreign Capital Wanted

DESIRE to expand manufacturing facilities is at present a primary motive governing the activities of the Russian Government, according to Stewart M. Marshall, who with Frank L. Estep, both members of the consulting engineering firm of Perin & Marshall, New York, recently returned from a visit to Europe. The demand for manufactured articles is growing apace and to meet this without having recourse to imports (which the Government aims to keep at a minimum to maintain a balancing of international trade), foreign capital is wanted to rehabilitate and build up factories and mills. It is generally believed in the United States that the peasant farmer is disinclined to sell his grain to the Soviet Government for export unless he is able to exchange the paper money immediately for clothing and other manufactures.

Mr. Marshall was emphatic that his stay in Russia was too short to speak with any finality on general economic matters. However, it appears he had excellent opportunities for observation. Naturally he covered particularly the situation in the metallurgical industry, but before putting questions to him regarding iron and steel, his views were asked on the general promise of Russia. This is what he said:

"The present condition of the plants is good in view of the disorganization of the country during the past ten years. The improvement in all lines in the last three years has been prodigious, and this improvement is still continuing. The willingness of the Central Government to permit the technical experts who operated the plants prior to the war to control operations today

insures economical production eventually and probably in the very near future."

He looks for a steady movement toward increasing private ownership and management of business, and believes that in the long run the form of government and social system will not differ greatly from that in this country, except that probably government ownership will be relatively extensive.

Industry Divided Into Three Classes

Industrially, under the "New Economic Policy" announced by Lenin in 1921, enterprises are divided into three classes. Iron and steel come under class I, which includes those of national importance having large and well equipped plants. They remain solely in the hands of the Government and are operated under the direct control of the "Supreme Council of National Economy." Class II enterprises are of less importance. They serve a restricted area and are under regional branches of the supreme council. Class III covers shops, small manufacturing plants, unimportant trading organizations, etc.

There are further groupings under these main classes. Enterprises in class I may be wholly conducted by the Government, in which case they receive all of their funds, raw materials and food supplies from the Government and the entire product is distributed by the supreme council. A second group in class I includes enterprises which, while they belong solely to the Government, must provide themselves with their own supplies. They purchase raw materials and other



Stewart McCulloch Marshall, whose observations on the industrial situation in Russia are here reported, spent several weeks of a recent sojourn in Europe in the iron and steel-making regions in southern Russia. His views were sought as likely to give facts uncolored by political or special interest, and the accompanying interview has the added value that it dwells chiefly on industrial matters and brings out some commonly unknown details of the Soviet industrial fabric.

Mr. Marshall has been a member of the consulting engineering firm of Perin & Marshall, New York, since 1916. His career in iron and steel began in 1902, when he became steam engineer for the Cambria Steel Co., at Johnstown, Pa. In 1912-14 he was chief engineer of the company, and then, after about a year as assistant general manager of A. J. Haws & Co., refractory manufacturers, he served for two years as chief engineer of the Southwark Foundry & Machine Co., Philadelphia.

requirements and sell their own products in the open markets. They turn such profits as they make over to the Government. A third group comprises those industries which cannot be conducted governmentally on either of the two preceding bases and which are rented or given out on concessions.

Similar groupings are made in classes II and III except that more of these are put in the third group and are rented to individuals or smaller companies.

Four Main Trusts in Iron Industry

The important enterprises in the first class are usually combines or trusts. These trusts may be vertical or horizontal and, in some cases, may include enterprises which are quite dissimilar, but which are in close proximity and can be managed from one central office in a remote district.

Taking up the iron industry of South Russia, Mr. Marshall said there are four main trusts. The Donetz Coal Trust, for short called "Donougol," operates nearly all of the coal mines and the coke plants connected therewith in the Donetz basin. The iron and manganese mines are under the Southern Ore Trust, called for short "URT." This trust manages the iron mines at Krivog Rog and Kertch and the manganese mines at Nicopol. The steel industry itself, with all its ramifications, is under the Southern Metallurgical Trust, termed "Yugostal." This trust has blast furnaces, steel works, rolling mills and roll shops, together with the coke plants and coal mines connected therewith, which are located at the steel works, which are in the Donetz basin.

Neither Donougol nor Yugostal controls the by-product departments of the coke plants. These are under a separate trust called Koks & Benzol. The reason for this separation is that these by-products are considered raw materials for the munitions industry and largely as war materials rather than commercial products. This trust purchases the gas and tar from the coke ovens at a fixed price per ton of coal, an arrangement that is not calculated to put a premium on the economical operation of the coke plant itself.

The trusts mentioned are horizontal, but in other parts of the country there are others which are vertical, comprising mines, metallurgical plants and finishing departments, producing a manufactured article from the raw material through to the finished product.

Head of Government-Managed Industry in Moscow

The question was asked how the Supreme Council of National Economy directs government-managed industry. Mr. Marshall's reply was: "It either manages those which are entirely controlled by the State, or it arranges for leases of those which are in private hands. The principal office is in Moscow and the head of the organization is one of the most influential men in Russia. At the present time Djerzinsky is in charge. He will be recalled as the former head of the secret police organization, the famous Cheka, and later as having reorganized the railroad system of the country and put it into its present very excellent condition.

"This Supreme Council is divided into a number of sections, each controlling a different type of industry. The iron trade comes under the section of Glavmetal and this is further subdivided into black metals and colored metals. The black metal section directs the iron and steel industry and the machinery trade using iron and steel. There are sections having charge of the metal mines, the coke plant by-products departments, coal mines, and the copper, textile and other principal industries.

Black Metal Division

"Under the black metal division of the Glavmetal section there are regional subdivisions which have in charge the iron and steel industry in the four sections of the country, Urals, Leningrad, Moscow and South Russia. The South Russian section is managed from Kharkov, in which is the principal office of Yugostal.

"From the main office of Yugostal in Kharkov the individual plants are directed. The general manager is there and each works has a local manager who re-

ports to the general manager. All of these managers are Communists, and former workers or peasants. The managers of two Yugostal works, employing 10,000 to 15,000 men, were coal miners. Another was a blacksmith, another a machinist and a third was a roll hand. I believe men of this type manage all of the large industries, and where there are not enough for each individual enterprise, at least the regional manager is a Communist.

"Under the Czar agitators and others who aimed not at revolution but at improved social conditions were sent to Siberia. Among the Soviets such a sentence is to many a badge of honor, and there is an organization of over two thousand ex-deportees who take great pride in their membership. In many respects these men correspond to the early patriots of our own Revolution. At least two of the steel works are managed by men in this organization."

How Workers Came to Be Managers

Questioning that success with such management seems possible, Mr. Marshall said he could see the reason for its adoption in Russia. "When these plants were first taken over there was open or covert opposition by the technical staffs. What the Central Government needed was to have some man on the ground in whom they had absolute confidence, who could be trusted to carry out orders explicitly and who would do all that was possible to support the Central Government. They could not afford to risk putting the principal industries in the hands of those opposed to the regime. As the Government was composed of workers and peasants, it was natural that workers should be selected for positions of this kind, and as only men who had actually worked with their hands could belong to the party, these managers must necessarily come from that class.

"Results have not been so chaotic as one would expect for reasons which I will explain later. Some of these men are developing into competent executives, and where they are not reasonably successful they are promptly changed by headquarters. In fact, the average tenure of office in some industries has been about six months. The managers who have been displaced from large plants have gone to smaller works, then frequently to still smaller and less important ones and in some cases have disappeared from the picture entirely. Djerzinsky is not a man who will tolerate inefficiency very long and he recently issued a public announcement that henceforth managers must qualify for their positions by showing competence in the management of the plants under their control."

How Technical Men Fit Into Organization

The reason that this scheme functions at all, it appears, is that under the managers, and really actually in control of operations, are the chief engineers. Yugostal has such a man in the person of the technical director at Kharkov and under whom is a chief engineer at each plant. These engineers correspond to our general superintendents and have the same functions and authority. They in turn have a staff of engineers and plant superintendents operating each department. In the steel industry of South Russia these men are a fine group. Most of them are university graduates and every one has been in the steel industry for many years. Most of them were chief engineers or managers or assistants in these positions prior to the war and among them are the most able steel men in Russia.

"They have a dual responsibility," Mr. Marshall explained, "reporting both to the technical director in Kharkov and to the local manager. Friction no doubt exists, but my impression is that the manager devotes his time principally to questions of labor, social welfare and the relations of management to workmen. He is responsible for seeing that the many rules which now safeguard labor are observed; that men are not improperly discharged, that conditions of labor in the mills are satisfactory, and that the men are paid in accordance with the contract which exists between the trust and the labor union. The chief engineer confers with the manager and discusses operating questions

with him, but his results are more carefully scrutinized by the technical director in the head office."

Seventeen Divisions of Labor All Referred to One Base Wage Rate

As to wages, conditions of employment and the like, Mr. Marshall said:

"All men connected with the metallurgical industries must belong to the union. In fact this is a government requirement which applies to all trades and crafts, and the union includes everyone from the manager down to the office boy. Except in the case of specially qualified men, there is no direct negotiation, so far as wages are concerned, between the trust and an employee. All this is handled by the union and is fixed by a yearly contract.

"This contract provides for a great number of safeguards for the men and specifies their duties. It groups all classes of men, skilled and unskilled, into seventeen divisions. These divisions each carry a specified rate of pay in terms of the rate fixed for the lowest or No. 1 class. When the contract is signed each year, the wage for class No. 1 is the only one which is fixed. All other classes are paid, automatically, amounts corresponding to the index which belongs to each class. For instance, if class No. 1 is paid one ruble per day, class No. 6 is paid 2½ rubles, No. 12, 5 rubles, and No. 17, 8 rubles.

"These classifications include the managers and the chief engineers, who are in class No. 17, and consequently are paid eight times as much as the lowest floor sweeper in the mill. However, it is permissible for the trust to make an individual employment contract with the skilled technicians. This individual contract will provide a bonus salary above his union wage, which will vary with the position he holds and his abilities. My impression is that the total income of these men will average over twice the union wage, and this income is slowly rising.

Technical Men Engaged Far Beyond 8-Hr. Day

"The 8-hr. day, except in the case of special contract men such as chief engineers, is standard throughout the entire country, and there are severe restrictions on the amount of overtime which the man may be asked to put in, in any one month. He is paid an extra rate, as in this country, for overtime. This arrangement, however, does not apply to men under special contract. They are required to waive all restrictions as to extra hours, to put in all the time that is necessary, and are not paid for the extra service. The chief engineers today are working from ten to sixteen hours, seven days a week, because the amount of work which is needed just now to get the plants going is prodigious.

"Each position in the steel plant comes under some specific class in the cooperative agreement and carries with it a definite wage depending upon the base rate established at the beginning of the year. The average classification is such that it makes the average wage about two and one-half times the base rate.

Increases in Wages Must Come

"The average wage is approximately 40 rubles per month and is about 90 per cent of prewar, while living expenses are certainly double. But in addition to the wages, the men now receive some perquisites which were not granted before, such as free house, coal, light, water, insurance and many small items, and with these their gross income is probably 10 per cent above prewar. From what a stranger learns of the cost of food and clothing, it is difficult to see how the working classes can make both ends meet. My impression is that material increases in wages must come unless there is a great reduction in the cost of manufactured articles and food. With improvements in industrial plants and better railroad service these costs will come down, but the tendency at the present time is for wages to increase in order to equalize somewhat the living conditions.

"The total cost to the trust of these perquisites

given to labor is about 60 per cent of the average wages. Not all of this however is really income to the worker, because it included insurance, wages paid to the union secretary, who is theoretically an employee of the plant but devotes his time entirely to the union, wages paid learners and apprentices and many other minor items."

Remarkable Housing and Village Developments

All through the country there are great housing schemes for the workers and excellent villages are being built at mines and industrial plants. The buildings themselves are attractive and well constructed, either of concrete or stone, depending upon the locality. The roofs are of tile or asbestos shingles. Most of them are double houses but in some cases they are built in groups of four or five dwellings, mostly on one floor but occasionally with one or more dwellings on a second floor. They are well separated with ample ground around them. Streets are being laid out and will be paved. There are running water and toilet facilities in the houses and a good sewerage system. Altogether these communities are most attractive and when completed will be a great advance over prewar standards. It is requiring an enormous expenditure on the part of the Government to provide these facilities, but apparently the Government is willing to sacrifice some other things in order to furnish labor with good surroundings.

American Methods and Equipment Favored

"The Government's program provides for the most thorough modernization of individual plants and American practices are favored almost universally," said Mr. Marshall. "There is a small German school, which is natural because many of the technical men were educated in Germany, but it is my impression that this group is quite in the minority. Engineers and the Soviet officials believe that, as Russia is a country of great distances with a large population, her conditions much more closely resemble those of this country than the rest of Europe and that American practices in railroads and industries are what she needs. There have been a few commissions from the railroads, mines and industries who have visited this country as well as some European countries, and they have gone back imbued with the idea that American machinery and American methods are perfectly adapted to Russian conditions. As a rule I think this belief is correct and if possible I am sure that our methods will be used there.

"Just now the difficulties are financial and, unless the Soviet Government can obtain credits here, I fear that European equipment will be adopted, which will not only lose for us the present markets, but by fixing Continental practice in the country again will make it difficult to introduce American machinery later on. Now is the time when the standards can be and should be altered.

"The manufacturing costs at the plants themselves do not compare unfavorably with prewar when the increased cost of supplies and in some cases labor is taken into consideration. Pig iron, which cost \$14 to \$15 per ton to manufacture in 1913, is costing now something less than \$25 to \$28 per ton in spite of small outputs and the reduced efficiency of plant."

A world's record in coal loading is reported by the Virginian Railroad at its new coal pier No. 2, Sewalls Point, Va. The steamship Lemuel Burrows recently took on 11,785 tons of coal in 2 hr. 55 min. There were 156 cars of coal, of which 77 were large, all being equivalent to 233 50-ton units. The coal was handled with the two car dumpers and with four conveyor cars, the equipment handling 79.9 cars or 4071.4 tons of coal per hr. This coal handling plant, which was placed in operation about a year ago, was designed by the Hulett Engineering Co., Cleveland, and built by the Alliance Machine Co., Alliance, Ohio.

Many Topics Before Testing Society

Progress in Magnetic and Fatigue Testing—Stainless Iron and Corrosion—Brittle Boiler Steel— New X-Ray Rules and Testing Developments

WITH an attendance which exceeded all previous registration and with the attainment of a total membership of 4000 for the first time, the American Society for Testing Materials celebrated its twenty-ninth anniversary at Atlantic City last week. The usual sessions of committees, full technical meetings and other gatherings were attended by over 900 men from the varied industries represented. A feature was the delivery of the first Edgar Marburg lecture.

Five sessions were devoted to the metal industries. One inconvenient phase was a lack this year of fully preprinted papers and reports. The usual committee reports on specifications, representing the culmination of the year's work, were formally accepted, registering progress and formulating new or improving old specifications. In the following report leading features are briefly reviewed.

Steel Specifications—Brittle Boiler Steel—Sulphur in Rivets

CHIEF interest in the regular steel session was shared by the usual report of committee A-1 on steel and a paper by Prof. S. W. Parr and F. G. Straub of the University of Illinois entitled "The Cause and Prevention of Embrittlement of Boiler Plate."

Why Boiler Steel Becomes Brittle

Professor Parr presented the paper, which covers 28 printed pages. Briefly the authors report that a method of procedure was devised by means of which the embrittlement effect, recognized chiefly as three types of cracks, could be produced at will, making it possible to study both the conditions under which it occurs and the remedies for its prevention. The results indicate that two conditions must be present simultaneously to produce this embrittlement: First, stressing the metal above the yield point and second, the concentration of sodium hydroxide to a point in excess of 350 g. per liter, that is, it can be brought about only by the combined action of stress and proper chemical attack. Results of investigations indicate that it can be stopped, not by the removal of stresses, which is impossible, but to some extent by inside caulking or by modification or control of chemical conditions in the water. The authors offer photographs of cases of actual embrittlement in widely distributed regions from Buffalo to Southern California and from Michigan to Texas, indicating the wide distribution of the difficulty.

H. J. Kerr, of the Babcock & Wilcox Co., testified to his knowledge of such cracks for 15 years. In that time the sodium hydrate cause had been often explained away and the steel blamed. The best boiler construction has failed. Caustic cracking is more than a myth as testified to even in Germany where it has been discussed for 12 years. Boiler makers have kept up their standards and it has been found that inside caulking aids in preventing caustic concentration. Another speaker suggested the abandonment of riveted seams for high pressure boilers, thus permitting annealing and the elimination of stresses. He reported that forged and hammered drums are being used abroad.

How Strong Are Welded Joints?

The "Strength of Welded Joints" was discussed in a paper by J. R. Dawson, Union Carbide & Carbon Corporation, New York. The author presented the results of oxyacetylene welds on strips of $\frac{1}{8}$ -in. steel plate using a "high-test" welding rod containing 0.20 per cent carbon, 0.80 per cent manganese and 0.60 per cent silicon. In the various series of tests, many welds were made by one man and one weld by many different men. In the large majority of cases the fracture of the test pieces was outside the weld and showed

strengths equal or superior usually to the original metal.

It was suggested in a brief discussion by Prof. H. F. Moore that welded joints are not always as good under fatigue conditions as the normal materials. He said there was still some question as to the value of such joints and whether, if made on thick material, the results equal to those on thin.

Three other papers presented at this session were entitled "Compressive Strength and Deformation of Structural Steel and Cast Iron Shapes at Temperatures up to 950 Deg. C," by S. H. Ingberg and P. D. Sale, of the United States Bureau of Standards; "Some Defects Which Have Been Found in Large Carbon-Vanadium Forgings—Their Causes and Prevention," by O. B. Schultz, Lima Locomotive Works, Lima, Ohio, and "Methods of Test in Relation to Flow in Steels at Various Temperatures," by H. J. French, Bureau of Standards, Washington. The paper by Mr. Schultz shows that a steel which has been carefully manufactured by the open-hearth process and correctly forged presents no difficulties in normalizing. Mr. French, in his paper, discusses comparisons of the load-carrying ability, in relation to some service requirements, of boiler steel, a stain-resisting steel and high-speed steel, and is a further addition to his valuable contributions to the general subject of strength at high temperatures.

Improving Steel Specifications

In the regular report of committee A-1 on steel the usual proposed revisions in certain standards and in some of the tentative standards which are the result of the committee's work during the year were presented and adopted. There were 11 revisions of certain standards steel specifications and five revisions of tentative standards, three of which were advanced to standard, namely, those for carbon tool steel, for high-speed tool steel and for carbon steel castings for valves, flanges and fittings for high-temperature service. Six new tentative standards were proposed, one of which, having to do with marine boiler steel plates, was withdrawn. The others cover commercial quality hot-rolled bar steels, commercial cold-finished bar steels and cold-finished shafting, cold-rolled strip steel, forged or rolled steel pipe flanges for high-temperature service and lap welded and seamless steel pipe for high-temperature service.

Sulphur in Rivets

An important committee report was that of the joint committee on investigation of the effect of phosphorus and sulphur in steel. The chairman of the committee, Dr. George K. Burgess, presented the commit-

tee's conclusions on the effect of sulphur on rivet steel. The conclusions presented may properly be considered valid only for the type of rivet steel used in the investigation, namely, one with a carbon range of 0.09 to 0.15 per cent, manganese 0.35 to 0.64 per cent, phosphorus, 0.005 to 0.035 per cent, silicon 0.002 to 0.057 per cent and sulphur ranging from 0.04 to 0.18 per cent.

The details of the investigation have been presented in three previous reports in 1922 and in 1924. Practically all of the ingots and billets rolled satisfactorily, including the ingot from the high-sulphur heat. The sulphur present in commercial rivet steel, says the committee, up to at least 0.06 per cent is not detrimental,

the tests showing no systematic relation between any of the physical properties determined and the sulphur content up to 0.06 per cent. With the sulphur content above approximately 0.06 per cent, the values of certain properties decrease with the increase in sulphur content. These are enumerated in the report. The committee calls attention to the remarkable agreement in physical properties found in the total of 5400 measurements of the various tests carried out independently in the two laboratories which did the work. It is expected that the whole report containing all data in tabular form will be published by the Bureau of Standards.

Comparing Tests on Various Kinds of Cast Iron

CONSIDERABLE attention was given to cast iron at one of the sessions in the form of two papers: "A Study of the Relation Between Properties of Cast Iron Pipe Tested Under Impact, Internal Pressure and Flexure and the Corresponding Properties Found in Several Kinds of Test Specimens Taken Therefrom," by Prof. A. N. Talbot and F. E. Richart, University of Illinois, Urbana, Ill., and "A Note On the Relations Between the Proposed Standard Test Bar for Cast Iron and the Two Existing Standards," by J. T. Mackenzie, chief chemist, American Cast Iron Pipe Co., Birmingham.

In the Talbot-Richart paper a report is given of the tests conducted on 25 lots of 6-in. pipe made by two sand-cast processes, the vertical and horizontal, and by the two centrifugal processes, the Delavaud and the sand-spun. Pipe from 10 foundries was used. In the internal pressure test, hydraulic pressure was applied to the pipe until failure. In the flexure test, the load was applied at the middle of a span of 10 ft. In the impact test, the pipe, filled with water under pressure,

was supported at points 10 ft. apart and a hammer weighing 50 lb. was dropped from increasing heights until failure. Comparisons are made of the strengths of the various test specimens with the bursting strengths of the pipe and with their flexural strengths. The tests as a whole give useful data on the relation between the properties and quality of the pipe and the results obtained from test specimens.

Mr. Mackenzie, in his paper which was not pre-printed, carefully compares, under uniform conditions, extensive tests which he has made using the proposed A.F.A. bar, offered to supplant the standard 2 x 1-in. bar and the arbitration bar. His conclusions were that the proposed bar gives the best results for deflection and load and can be advantageously substituted for the other two.

Commenting on Professor Talbot's paper, Mr. Mackenzie recorded himself in favor of the strip test discussed by the author as overcoming some objections to other tests. He discussed some data on resilience, in tabular form, based on Professor Talbot's results.

Corrosion and Stainless Iron

BESIDES the reports of two regular committees on corrosion at one of the sessions, an important paper which elicited considerable interest was delivered in abstract by T. H. Nelson, consulting metallurgist, Philadelphia, on "Recent Developments in the Use and Fabrication of Corrosion-Resistant Alloys."

Large Installation of Stainless Iron

Details of the author's paper were not available because it was not pre-printed and because only a very brief abstract was offered. The paper, however, deals entirely with one type of stainless iron and discusses a recent order placed by one of the largest explosive and chemical manufacturing companies in the world for equipment necessitating the fabrication of articles which call for the production on a large scale of shapes and sections as well as castings, the like of which has

not been previously attempted, according to the author. In this particular undertaking, which involves the manufacture of nitric acid, material containing over 16 per cent chromium is the predominating one. Many of the fabrication problems involved in handling this difficult material and some of the other difficulties are discussed in the paper.

The writer states that he fully realizes that at present the manufacture of these alloys in general is a strictly competitive subject. He says, however, that, from personal experience in interviewing many of the most prominent engineers in the country, it is surprising to find that the general tendency is to regard all rustless irons or steels as very similar and that belief is very common that, if one type will meet certain conditions satisfactorily, all of them will. This is not the case. He expresses his realization, however, that



DR. ARTHUR N. TALBOT delivered the first Edgar Marburg lecture. He has for many years been one of the prominent professors at the University of Illinois. He is a past president and honorary member, not only of the Testing Society but also of the American Society of Civil Engineers.

J. H. GIBBONEY, the new president of the society, is engineer of tests of the Norfolk & Western Railway Co., Roanoke, Va. He has been active on various committees for many years. He joined the society in 1906 and is chairman of committee A-5 on corrosion of iron and steel.



there are many problems still unsolved. Mention is made in the paper of the possibilities of the nickel-chromium series which, despite the higher costs, is much more suited for use in conjunction with some of the mixed acid problems than any of the carbon-chrome series.

In a rather interesting discussion which followed, Mr. Nelson replied to certain questions that seamless tubes are now available made of rustless iron from 1 to 6 in. in diameter and that the material can be welded. One of the serious problems, however, in welding as well as riveting is the overcoming of a tendency to grain growth. It was stated that, to overcome corrosion contact with non-ferrous metals, the presence of over 16 per cent chromium is essential as well as the addition of considerable silicon. J. H. Parker, of the Carpenter Steel Co., Reading, Pa., suggested that materials containing the various percentages of chromium deserve study and that the 16 per cent type is not a cure-all. He testified that tubes in many sizes have been made of the 12.50 per cent chromium metal and that it had an advantage over the higher percentages in certain properties and also that there was less

grain growth during oxy-acetylene welding than in the higher chromium alloys.

Corrosion Committees Active

The two committees which presented the usual reports were committee A-5 on corrosion of iron and steel and committee B-3 on corrosion of non-ferrous metals and alloys. Chairman J. H. Gibboney of the former committee, in presenting the report, submitted new tentative specifications for the coating on zinc-coated wire, for galvanized telephone and telegraph line wire, and for galvanized tie wire and presented the results of the various sub-committees' work on accelerated tests on sheets coated by several zinc-coating processes and by lead spraying, and on the inspection of copper-bearing and non-copper-bearing sheets exposed to the atmosphere and to total immersion.

A general report of progress was presented by Sam Tour, secretary of committee B-3, covering the tests conducted and work carried out by various laboratories cooperating in the committee's program. There is a list of non-ferrous metals and the importance of each metal for each type of corrosion service is noted.

Advance in the Study of Fatigue of Metals

THE prestige which the society has attained in literature on the subject of the fatigue of metals was decidedly increased this year by the presentation of three papers by leading authorities. These were part of the program of the session devoted to corrosion and fatigue of metals.

The three papers were as follows: "Stress-Strain-Cycle Relationship and Corrosion-Fatigue of Metals," by D. J. McAdam, Jr., United States Naval Experiment Station, Annapolis, Md.; "Effect of Grooves, Threads and Corrosion Upon the Fatigue of Metals," by R. R. Moore, McCook Field, Dayton, Ohio, and "Fatigue of Metals by Direct Stress," by P. L. Irwin, Westinghouse Electric & Mfg. Co., Pittsburgh.

Space does not permit an adequate review of the important information contained in these papers, only one of which was pre-printed. Dr. McAdam, however, in his paper discusses the form of the pure stress-cycle endurance as affected by chemical composition, heat treatment and cold working, cycle frequency, form of specimen and thermal conductivity. He also discusses the corrosion-fatigue of metals.

Mr. Moore, in his paper, gives results of tests showing the effect of various shapes and sizes of notches upon the endurance limit of a heat-treated chrome-vanadium steel and an aluminum copper alloy. Mr. Irwin's paper gives the chemical analysis, heat treatment, tension test, endurance limit under flexural stress and endurance limit under axial stress for electrolytic annealed copper, pure nickel, monel metal and stainless

iron, whose proportional limit in tension is below the endurance limit.

The chief discussion offered of these three papers was by Prof. H. F. Moore, University of Illinois. He said, in part, that Doctor McAdam's paper gives some very valuable comment on the general characteristics of graphs of fatigue tests and rather startling test results on the effect of corrosion on fatigue strength. Some check made on larger specimens would be of interest to show whether the minute cracks formed damage large pieces as severely as small ones. Doctor McAdam's tests and those reported by Mr. Moore certainly demand that attention should be paid to the effect of corrosion on fatigue strength. A striking feature of the paper by Mr. Moore is his demonstration of the fact, already known, but not very generally recognized, that sudden changes of form do not reduce the fatigue strength of a machine part nearly so much as is indicated by the mathematical theory of elasticity. Tests at the University of Illinois seem to indicate that alloy steels are affected rather more by such local changes of form than most other steels, a result in line with Doctor McAdam's corrosion-fatigue results. Mr. Irwin's paper supplements effectively his work reported last year and, in Professor Moore's opinion, establishes the reliability of the simple and inexpensive rotating beam machine for fatigue tests. Also, he emphasized that the society is to be congratulated on these three papers, each marking one or more different contributions to our knowledge of the fatigue of metals.

New Testing Methods and Apparatus

THE features of the usual session devoted to testing methods and to new testing devices were the report of committee E-1 on testing and the presentation of papers covering new instruments.

The voluminous report of 58 pages of committee E-1 was presented by its chairman, J. A. Capp. Only a few features can be mentioned here. The committee offers a general review of the present methods of the society and presents recommendations for the preparation of methods of test in general. A valuable section or appendix is a résumé of the facilities and methods for making impact tests and their interpretation as well as a detailed report, also an appendix, on the testing of thin sheet metals. The committee recommended for advancement to standard of tentative specifications for sieves for testing purposes, and revisions of the tentative method of calibrating testing machines by an elastic calibration bar.

Two new testing devices were presented as papers. One was "A New Type of Mirror Extensometer," by M. F. Sayre, associate professor of applied mechanics, Union College, Schenectady, N. Y., and "A New Twist Meter for Torsion Tests," by J. H. Smith, professor of civil engineering, University of Pittsburgh, Pittsburgh.

The new mirror extensometer is offered as adaptable to routine testing of tension specimens of 2 or 8-in. length where a high degree of precision in proportional limit determinations is desired.

The new twist meter for torsion tests is an instrument for measuring the amount of twist in specimens under torsional stress, the principal advantages being that the instrument is quickly and accurately attached, the radius of the twist measuring arc is an accurately fixed quantity and that errors in twist readings due to bending of specimens are entirely eliminated by means of universal joints in the yoke connector. The instru-

Authors of Four of the Papers



J. R. DAWSON



R. R. MOORE



E. H. DIX, JR.



J. T. MACKENZIE

ment was assembled for inspection during the convention.

Research Activities Broaden

Prof. H. F. Moore, chairman of committee E-9 on correlation of research, presented a report of progress. At the end of its second year of existence, the report points to one of its outstanding accomplishments the organization of a research committee on the yield point of structural steel. It announces the completion of a card indexing of all research projects and discusses and reviews the various research projects being carried on by the society's committees and through joint activities. Announcement was made that N. B. Hoffman, metallurgist Colonial Steel Co., Pittsburgh, had been made chairman of the new research committee on the effect of tin and arsenic on high-speed tool steels and

that M. O. Withey, professor of mechanics, University of Wisconsin, Madison, Wis., had been appointed chairman of the new research committee on the yield point of structural steel.

How to Test Thin Metals

An important paper, which was considered jointly with the report of committee E-1 on methods of testing, was presented by R. L. Templin, chief engineer of tests, Aluminum Co. of America, New Kensington, Pa., entitled "Effects of Size and Shape of Test Specimen on the Tensile Properties of Sheet Metals." It reports on an extensive series of tests to determine the proper test piece and makes valuable recommendations. This paper, in conjunction with the appendix to committee E-1's report on the same subject, marks a decided advance in the knowledge of this subject.

Judging Steel by Magnetic Analysis

THAT definite progress has been made in magnetic testing of steels was clearly demonstrated by papers and discussions at the first session. Under the leadership of F. P. Fahy, New York, chairman of committee A-8 on magnetic analysis, many constructive facts were brought out.

Reviewing the work of his committee, Mr. Fahy, in his report for the committee, stated that results to date indicate that the magnetic characteristics provide a very sensitive means for determining the response or lack of response of material to heat-treatment processes, once information as to the nature of the normal response is obtained and that variations, not discernible by the more commonly used methods of examination, may be determined—such as effects of time and temperature and the changes due to aging. The committee went on record as being gratified that definite progress has been made. It stated that it will be generally conceded that a method of test which does not modify the material tested offers unique advantages over many other forms of inspection, but that there are fields of usefulness for which the present degree of advancement of magnetic analysis is not yet adequate. This is a matter, however, of time and development only.

High-Speed Steel and Ball Races

The subject was elaborated upon by two papers. One was appended as part of the committee's report and was entitled "The Magnetic Analysis of High-Speed Steel," by Thomas Spooner, research engineer Westinghouse Research Laboratory, East Pittsburgh. The other was "Testing of Ball-Bearing Races by Elec-

tric and Magnetic Methods," by Haakon Styri, S. K. F. Laboratories, Philadelphia.

Mr. Spooner's paper presents results of an investigation to determine the relation between the electrical and magnetic properties and heat treatment of high-speed steel with the object of devising a simple method of inspection for heat treatment control. Various methods of test are discussed. The most suitable tests gives a quick and reliable indication of the uniformity and absolute values of the heat-treating temperatures, disclosing differences which are not brought out by the usual methods. If quenching temperatures are known, the actual drawing temperatures can be quite accurately determined magnetically. The results, says the author, warrant attention being directed to the greater commercial use of magnetic tests as a means of determining:

- 1.—The uniformity of material before heat-treatment both chemically and as a function of mill practice;
- 2.—The uniformity of the quenching operations to check not only temperature but oxidation and decarbonization, and
- 3.—The uniformity of drawing operations.

How to compare the magnetic qualities and hardness of ball bearing races by one reading is described by Mr. Styri in his paper, which was not available. He has devised a simple method which involves the use of a phase shifter. The results are derived from a number of different sizes of races, as well as different heat-treatments.

Other members of the committee were called upon by Mr. Fahy to present their views and some of the results of their own work. Among these were A. V.

de Forrest, American Chain Co., Bridgeport, Conn., and R. L. Sanford, Bureau of Standards, Washington. The remarks of these investigations were fittingly supplemented by brief discussions by M. A. Grossman, research metallurgist United Alloy Steel Co., Canton,

Ohio, and by Dr. Ancel St. John, consulting physicist, New York, who offered his cooperation and his X-ray laboratory for future work of the committee. Extensive plans for further investigations were announced by Chairman Fahy.

Non-Ferrous Metals and Metallography

AT the single session devoted to non-ferrous metals and metallography, the most interesting feature was a paper from a British metallurgist, George Mortimer, entitled "Aluminum Casting Alloys: The British Engineering Standards Association Specifications Reviewed." The fact that the author was not present, nor the paper pre-printed, detracted from its presentation. It was full of interesting comparisons. A striking statement was to the effect that in few cases in routine work can any test bar represent the strength of the casting. It was the author's opinion that it represents only the metal in the ladle. According to British practice, he reported, both a sand-cast coupon, integral with the casting, and the British chill-cast separate bar, as at present specified, involve too many variable factors to give a reliable indication of the quality of the melt. The author describes one method which eliminates variables of practical import in connection with a separate chill-cast bar.

Dr. Zay Jeffries, research department, Aluminum Co. of America, Cleveland, delivered a rather lengthy discussion of the paper, comparing some of the various American alloys with those of the British and concluded by saying "that in his opinion the sand-cast test bar is to be preferred for sand castings and the chill-cast test bar for chill castings."

New Specifications

The culmination of a year of considerable activity by committee B-2 on non-ferrous metals and alloys was attested to by the report presented by the chairman, Prof. William Campbell, Columbia University, New York. The principal achievements were new tentative specifications for aluminum bronze castings, for steam or valve bronze, for composition brass or ounce metal, and for aluminum base sand casting alloy in-

gots, all of which were formally adopted. Tentative specifications for white metal bearing alloys and for aluminum for use in the manufacture of iron and steel were advanced to standard.

At the same session an important paper entitled "Etching Characteristics of the Constituents in Commercial Aluminum Alloys," also unavailable in printed form, was presented by E. H. Dix, Jr., Aluminum Co. of America, New Kensington, Pa. The author offered a large assortment of slides representing photomicrographs obtained by the use of etching reagents and the application of certain technique in etching, which are described in the paper. The alloys involved were the binary alloys prepared from aluminum of exceedingly high purity.

New Data on X-Ray Analysis

THE most interesting part of the report of committee E-4 on metallography was the submission of proposed recommended practice for radiographic testing of metal castings, prepared by H. H. Lester, Watertown Arsenal, Watertown, Mass. The recommendation that this be accepted for publication as tentative standard was adopted. In presenting the report of the subcommittee which prepared the material on X-ray radiography, Dr. Zay Jeffries, the chairman, called attention to a completed glossary of terms used in X-ray metallography. It was prepared by L. W. McKeehan, Bell Telephone Laboratories, New York, and "is the most exhaustive of anything yet published in this field of metallography." The report of the committee also includes instructions on the care of the eyes when using a metallographic microscope, which were prepared by W. L. Patterson, Bausch & Lomb Optical Co., Rochester, N. Y.

The First Edgar Marburg Lecture

THE plan to raise money for the establishment of an Edgar Marburg lecture each year reached its fruition this year. A large audience assembled at 4 p. m. Wednesday, June 23, to listen to the first lecture, which was delivered by Prof. Arthur N. Talbot, professor in charge of theoretical and applied mechanics, University of Illinois, and an honorary member and past president of the society. In introducing the lecturer, President Fulweiler of the society paid a tribute to Edgar Marburg, for whom the lecture is named and who was the first secretary-treasurer of the society after its incorporation in 1902. He served until his death in 1918. He was one of the founders of the society and did much to advance its interests and mold its policies.

Doctor Talbot took as his subject "Research and Reinforced Concrete as an Engineering Material." He dealt fully both with the history of the developments in this field and with the possibilities which research can yet accomplish in improving and furthering the use of this important engineering material. The lecture, established on the recommendation of committee E-9 on correlation of research, more than fulfilled the original purpose of having described before the society, by leaders in their respective professions, outstanding developments in the promotion of knowledge of such materials.

At the close of the lecture Mrs. Edgar Marburg, in a graceful and highly appropriate address, briefly testified to her appreciation of the honor conferred upon her husband in the establishment of the lecture and told something of what she had known of his

earnestness and zeal in behalf of the society in its early days.

Next Conventions

WHILE no definite decision was announced as to the place of holding future conventions and group meetings, it is probable that the regular fall group meeting of committees will be held in Detroit in October, with the one in the spring of 1927 in Philadelphia or Washington. There has been considerable agitation recently as to the advisability of holding the annual meeting at some place in the Middle West. A canvass of the members on this subject was made but it was not entirely satisfactory. The executive committee has the matter under consideration and indications are that next June the meeting will be held at some place, preferably a resort, in the interior part of the country.

A new device for the accurate measurement of gas flow has been brought out by the Cutler-Hammer Mfg. Co. It is called the Cutler-Hammer Thomas meter and is made in sizes capable of measuring from 2500 cu. ft. to 200,000 cu. ft. per hour. The instruments show results in standard units, corrected for pressure and temperature.

The Ludlum Steel Co., Watervliet, N. Y., producer of carbon and alloy tool steel, is about to change over from 40 to 60-cycle electrical equipment. This change is expected to bring about a greatly increased flexibility and output of the mill.

Rolled Steel Truck Wheels

Manufacturing Operation of Suggestive Type—Other
Uses Could Be Made of Standard Rolled
Material—Methods of Forming

WHILE the Bethlehem rolled steel wheel for motor trucks has been made for many months, it is believed that the description of the process in the following paragraphs will not be amiss. It may suggest other uses to which rolled and other easily obtainable forms of steel may be put in the manufacture of products. The very simplicity of the method employed at Bethlehem is one of its best recommendations, while the uniformity of product resulting from this material and method must be of high degree.

Using the patented Grey wide-flange I-beam as the raw material, a section of predetermined length is passed through successive punching, forming, welding, sizing and drilling operations, and comes out as a complete truck wheel, lacking only the hub and the tire. The hub is fitted in the Bethlehem plant and the wheel, as so built up, is shipped to the truck maker.

It is pointed out that the rolling process to which the flanges of this particular type of I-beam is subjected in the Grey mill makes it especially applicable for this operation. The flanges are distinctly worked, just as the web is worked—all calculated to produce a uniformity in quality of metal and consequently an absence of internal stress. Rim and spokes are formed integrally from the rolled beam as punched and bent into

its final shape. The design of punching press and of punched section is such that the spokes, when brought together at the hub, form an interlocking keystone hub construction, as shown in the illustrations. Each wheel, therefore, aside from the spoke spacer and the hub, consists of one piece of rolled metal.

Consecutive progressive operations produce this wheel in a few minutes by a method adaptable to quantity production on a large scale. The economy of production thus assured is increased further by the small amount of waste material left during manufacture and by complete inspection of the stock before manufacture. Cold metal is used and about three-fourths of the operations are performed on large power and hydraulic presses. Wheels are thus made for several sizes of trucks and designed for Timken axles. Rear wheels are assembled with Timken brake drums and front wheels with hub caps. As shipped, the wheels are ready to receive the tire and to be installed on the truck.

After beams have been cut to length and inspected, the first manufacturing step is a punching operation, which outlines the spokes. The resulting condition of the beam is shown at the left in Fig. 1. This punched beam is then run through another press using a die

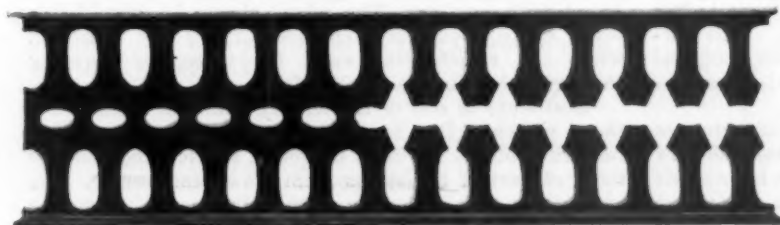


Fig. 1. (Above) Rolled Steel I-Beam During Second Punching Operation in the Manufacture of Bethlehem Rolled Steel Truck Wheels. At left is the result of the first punching; at right, that of the second.

Fig. 2. (Below) Section of I-Beam, Showing Spokes Staggered and Grooved. This is the blank for one wheel; it is one-half of that shown in Fig. 1.

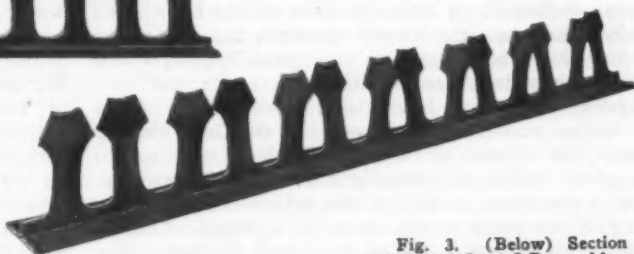


Fig. 3. (Below) Section of Rolled Steel I-Beam After First Forming Operation.

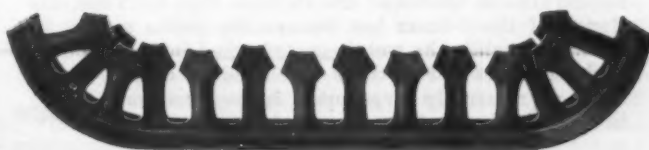


Fig. 4. (Above) Rolled Steel Truck After Final Forming Operation, Showing Steel Spoke Spacer in Place (right) and Separately.



Fig. 5. Bethlehem Rolled Steel Truck Wheel Complete, Ready for Shipment to the Truck Maker, Who Puts on the Tire and Fits the Set of Wheels to the Truck.



Fig. 6. (At Left) Two Types of Forged Steel Hub Core Used with Bethlehem Rolled Steel Truck Wheels.

	Type of Wheel					
	Standard Wood	Cast Steel	I-Beam	Steel Disk	Aluminum	Rubber-Cushion
Results of Radial-Compression Test						
Weight, lb.	308	400	389	445	204	625
Proportional limit, lb.	65,000	70,000	90,000	80,000	70,000	85,000
Deformation at proportional limit, in.	0.370	0.055	0.068	0.040	0.050	0.465
Ratio of proportional limit to weight...	211	175	232	180	343	136
Load at which micrometers were removed—						
Load, lb.	86,000	155,000	148,000	200,000	80,000	190,000
Deformation, in.	0.658	1.028	0.665	0.479	0.069	1.217
Maximum load, lb.	95,000	185,000	148,000	203,000	100,000	211,000
Slope of load-deformation curve, lb. per in.	173,000	1,275,000	1,320,000	2,000,000	1,400,000	370,000
Elastic resiliency—						
Resiliency inch-lb.	12,350	1,960	2,880	1,600	1,750	14,390
Resiliency per pound of metal in the wheel, inch-lb.	40.0	4.9	7.4	3.6	8.6	23.0
Results of Side-Thrust or Skid Test						
Proportional limit, lb.	18,000	30,000	35,000	13,000	18,000	32,000
Deformation at proportional limit, in.	0.44	0.35	0.72	0.39	0.28	0.82
Ratio of proportional limit to weight...	58	75	90	29	88	51
Maximum load, lb.	40,000	57,000	45,500	27,000	23,000	64,000
Slope of load deformation curve, lb. per in.	39,000	102,000	58,000	30,000	64,000	44,000
Elastic resiliency—						
At load, inch-lb.	4,280	4,815	11,890	2,800	2,610	12,060
At 180 deg. from load, inch-lb.	1,700	2,630	4,940	1,400	1,350	6,000
At load per pound of metal, inch-lb.	13.7	12.0	30.6	6.3	12.8	19.3

which coins or rounds the edges formed in the first operation. A second punching completes the spokes, as well as the ends of the spokes that go to make up the hub. The right end of Fig. 1 shows the beam after the operation has progressed to this stage. This second punching at the same time separates the original I-beam into two similar sections, each of which makes one wheel.

Next is a further press operation, which grooves the spokes and at the same time staggers them, so that alternate spokes fit on opposite sides of the hub. This furnishes the requisite lateral strength for the wheel after they have been fitted to the spoke spacer, which maintains them in proper relation.

Bending operations begin with the forming of the wheel fellows under another press. In the first bending the ends are carried through an angle of 90 deg. to the required radius, as shown in Fig. 3. The piece thus formed is placed on another press, which completes the bending of the beam to the shape of a wheel. Coincident with this operation the spoke spacer (shown at the left in Fig. 4) is inserted in the wheel and makes its appearance as shown at the right in Fig. 4. Thus, the flange of the I-beam has become the fellow or rim of the wheel, while the web is transformed into the spokes and wheel hub. For these two bending operations an unusually large press is used, measuring 118 in. between housings and having a die space of 72 in. and a 36-in. stroke.

Only once in the operation does heat appear. The wheel as shown in Fig. 4 is, in the manufacturing process, closed a little better than the illustration indicates. On a special electric welder the ends of the fellow are forced together and electric welding by the flash method completes the circuit. A slight excess of metal, allowed at the ends in cutting the I-beam, is burned off at the joint in making the weld. Pressure is exerted at the joint, by powerful hydraulic cylinders, to make a homogeneous weld.

Removal of the flash left by the welding operation is accomplished on a grinding wheel, and a smooth finish results. The wheel then is rounded to the S. A. E. circumferential tolerance, which is plus 1/16 in., minus 1/32 in. For this operation the wheel is placed in a tire setter hydraulically operated, which sizes the tire

to the required limits and completes the "rounding" of the wheel.

Forming the hub is done under a double crank press which places the spoke ends in proper contact with the spoke spacer. Then the wheel center (hub and spoke spacer) for the hub core is bored out on a vertical turret lathe. The wheel is trued from the outer diameter and bored, while the fellow is faced to width, in the one operation.

Holes through the wheel hub, drilled on a multiple-spindle press, make the wheel ready for assembly with the hub core and the brake drum. These are bolted on, the bolts extending through the hub core, spokes, spoke spacer, spokes on the opposite side and the brake drum, as shown in Fig. 5. This forms a strong and rigid unit. As the spokes are so shaped that their sides "key-stone" with each other on the hub, there is full bearing area against the spoke spacer, while each set of spoke ends has full circular bearing area on the hub core. Each spoke is bolted to two spokes on the opposite side of the spacer, one of the opposite pair being ahead of the first spoke, while the other is behind it.

Forged steel hub cores, two types of which are shown in Fig. 6, can be used. These are either drop or hydraulically pressed from the solid bar. This provides a homogeneous metal, having great strength and light weight as compared with castings. The wheel shown in Fig. 5 has seven chain hooks on each side. These are attached, when the specification calls for them, by riveting through holes punched in the fellow.

Resiliency is one of the leading features claimed for these wheels. Due to the rolled steel structure, this feature protects the tires on rough service and relieves them of part of the stress from blows and bumps. The welded one-piece wheel and the simple hub structure leave practically nothing to get loose, wear out or call for replacement.

Laboratory tests made by Thomas W. Greene in the Bureau of Standards, Washington, have given some remarkable results. These are shown in tabular form, as well as by the curves of Figs. 7 and 8. Twelve wheels were tested, two of each of the six types mentioned in the table. All were standard, having a 34-in. diameter and a 12-in. tread. One wheel of each type was tested for radial compression and the other for side thrust or skid. Both sets of tests are covered in the table.

In summarizing the tests, Mr. Greene states that

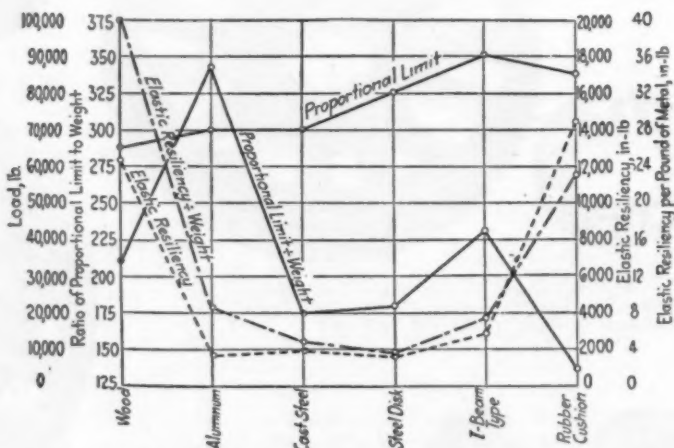


Fig. 7—Chart Showing the More Important Mechanical Properties of the Six Different Types of Wheel as Brought Out by the Radial-Compression Test

all the wheels tested are sufficiently strong to withstand any load to which they might be subjected in service. If any of them were to fail in service it probably would be due to side thrust or skidding. Consequently this latter test is regarded as more important for comparison than the radial compression test. "The I-beam type of wheel was the strongest and most resilient metal wheel tested. Except for resiliency it compares favorably with the wooden wheel. It had the highest proportionate limit, and its specific strength was higher than that of any other, except the aluminum wheel. To resist side thrust or skid, this wheel is the strongest and most resilient."

Foundry Equipment Makers Report Marked Activity

The thirty-sixth meeting of the Foundry Equipment Manufacturers' Association was held June 22 at Cleveland. Reports of business conditions, presented at the meeting, indicated that the foundry equipment industry is active. Many manufacturers reported their plants operating as high as 80 to 85 per cent of capacity.

One feature of the business transacted by the organization was the perfection of arrangements for the formation of a special group of crane manufacturers, which will function within the association. Among those now included in this group are the Whiting Corporation, Harvey, Ill.; the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; the National Engineering Works, Detroit; the Harnischfeger Corporation, Milwaukee; and the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

J. B. Courshon, National Trades Finance Co., Chicago, addressed the meeting on "Financing Machinery Sales." The association will hold its annual banquet at Detroit, on Sept. 27.

Iron Molders in Cincinnati Get 50c. a Day Raise

With the granting of an increase of 50 cents a day by their employers, union iron molders in this city have terminated their strike. The new agreement specifies a daily wage of \$7.50. The union members originally asked for \$8, and had been on strike since June 1 because the foundry owners refused their demands. After several compromise measures had failed to bring about a settlement, the two sides agreed on June 25 to the new scale calling for a 50 cents daily advance in wages.

Plan Plant for Making 600,000 Electric Refrigerators Annually

The Delco Light Co., Dayton, Ohio, subsidiary of General Motors Corporation, has announced the immediate inauguration of a \$20,000,000 expansion program at its Moraine City, Ohio, plant. More than \$5,000,000 will be spent for new buildings, to be completed early in 1927, \$7,000,000 for machinery, and \$8,000,000 for raw materials. The company will be able to produce 600,000 electric refrigerators a year, when the proposed program is concluded.

Plans call for a building 210 x 1600 ft., similar to the present building at Moraine City, and parallel to it. These two structures then will be extended 800 ft. farther north, thereby giving the company a one-story building with a total length of 2400 ft. and width of 480 ft. Immediately north of this plant will be erected two six-story buildings, 80 x 550 ft., which will be joined together by four elevator towers located for the efficient transportation of parts in production from one department to another. The one-story buildings in the new plant will be used for the manufacture of refrigerating cabinets, and the multiple-story buildings

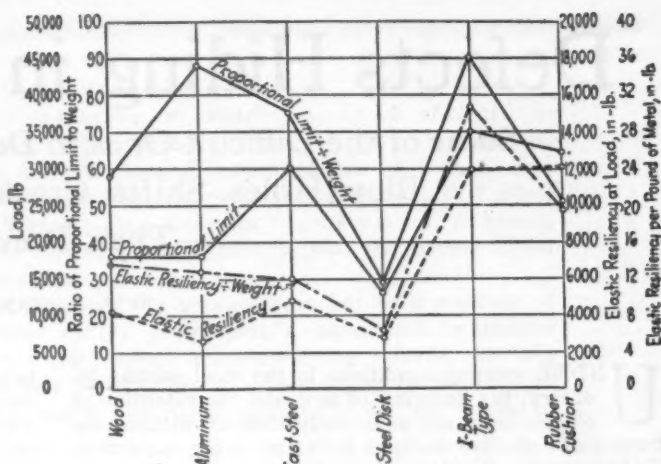


Fig. 8—Chart Showing the More Important Mechanical Properties of the Six Different Types of Wheel as Brought Out by the Side-Thrust or Skid Test

for the production of household mechanical refrigerating units.

South of the present plant a wood mill and lumber warehouse, 800 ft. long, will be constructed. The length over-all of the entire plant when completed will be approximately one mile. The heating plant, which now covers 10,000 sq. ft., will be enlarged to treble its present power production. The new program will not affect the company's plant at Taylor Street, Dayton, which will continue to manufacture Delco Light farm light and power plants, pressure water systems and similar accessories, and also to produce 1000 commercial refrigerating units a day. E. G. Biechler is president and general manager of the company.

W. H. Blauvelt to Study Gas and Blast Furnace Project in Philadelphia

William Hutton Blauvelt, consulting engineer, 120 Broadway, New York, who has specialized in by-product coke and gas production, has been appointed by Mayor Kendrick of Philadelphia as the city's consulting expert in negotiations now being carried on for the renewal of the municipal contract for gas with the United Gas Improvement Co.

Linked up with this investigation is the proposal of private interests in Philadelphia to build a by-product coke plant and blast furnace on the Delaware River in Philadelphia. The project is sponsored by Walter Wood of R. D. Wood & Co., cast iron pipe manufacturers, and others. These private interests have assured the city that capital can be raised for the building of the coke plant and blast furnace provided a contract can be entered into with the United Gas Improvement Co. for the sale of the coke plant gas. Such a contract would have to receive the approval of the city of Philadelphia, and Mayor Kendrick has engaged Mr. Blauvelt to investigate this phase of the situation along with the other matters involved in a new gas franchise.

Swedish Ore Agency Changes Hands

Buck, Kiaer & Co., 9 East Forty-sixth Street, New York, have been appointed sales agents in the United States for the iron ore produced by Trafikaktiebolaget Grangesberg-Oxelösund, Stockholm, Sweden. The latter company sells the Gellivare and Kirunavaara ores, which include the Captain brand. This ore is shipped from Narvik and Lulea, Sweden. The agency takes effect July 1. L. J. Buck is vice-president of Buck, Kiaer & Co., in charge of iron ore sales. The Swedish iron ore agency originally was held in United States by the late Albert Broden, but several years ago passed into the hands of Park & Williams, Inc., Philadelphia, who have retained it up to this time.

Defects Hiding in Steel Castings

Some of the Difficult Ones to Detect—Causes of Porosity,
Blow-Holes, Shifts, Cracks and Other Faults
—Their Prevention

BY F. J. STANLEY

UNDER existing conditions in the steel casting industry, the securing of new and the retention of old business are sufficiently difficult without the burden of defective castings delivered to the customers. Unfortunately, this is a burden which, so long as castings are produced under present methods of manufacture, can never be completely lifted. Perfection is earnestly sought but is never fully realized. There are defects that cannot be detected under routine inspection, even when this measures up to the elevated standards adopted by the research group. Some defects are hidden beneath the surface. Others, occurring upon the surface, are of such nature that the casting profile, in the absence of a dimensional check, appears normal to the eyes of the inspector.

The following list includes some defects that may escape detection at the foundry and be discovered by the customer. The arrangement of the list is not indicative of the relative importance of the defects, as such a ranking is dependent upon the class to which the casting belongs.

Blow	Misrun	Shrink
Core broken or misplaced	Porosity	Slag
Core wrong	Sand	Warping
Crack	Shift	Poor weld
Ground wrong		

An analysis of a few only of these defects cannot fail to emphasize the multiplicity of detail involved in the production of steel castings, wherein error of commission or omission often renders valueless the material and labor expended. In this paper some of the defects listed above will be discussed.

Porosity and Its Causes

POROSITY is the result of the entrapment of minute gas bubbles in the metal as it solidifies. It may occur either in segregated areas or throughout the entire castings, dependent on the cause.

It is often difficult and sometimes impossible to determine what produces porosity. The cause may be one or more of the following: Incompletely deoxidized metal; excessive moisture in the sand forming the face of the mold cavity; excessive farinaceous binders in the facing sand; carbonaceous material in the facing sand, of which particles of coal in fire clay, or finely ground splinters of wood, are examples; facing or backing sand with poor venting qualities; and lack of proper venting, due to the molder's neglected use of a vent wire. In addition to these causes, there is reason to believe that there are features of design which increase the susceptibility to porosity.

Generally, when one is confronted with a finished casting rejected because of porosity, it is very difficult

to name the cause definitely. Unless the history of the casting is known, one opinion may be as good as another. If a short time has elapsed between the molding and the discovery of the condition, it is often possible to determine the cause. Such a procedure is well worth the effort involved, for a definite knowledge of the cause or causes is the basis for preventing recurrence.

A porosity defect is illustrated by Fig. 1. The condition was discovered by the customer, and the interval between the shipment of the casting and its return was very short. This greatly facilitated the determination of the cause.

The casting, of which the section photographed is a part, was circular in form, having an outside diameter of about 48 in. It was made in a dry sand mold, and was fed by five risers equally spaced about its circumference. Machining showed five areas of porosity, of which the section illustrated is one, spaced as were the risers. Investigation disclosed the fact that, on the night the mold was poured, rain was blown in upon the mold. The night foreman examined it, decided no harm had been done, and poured it in the usual routine. The error in his judgment is apparent. Enough rain had gone down the risers to provide sufficient excess moisture ultimately to ruin the casting.

Examples of porosity such as described are not visible under even the best preliminary inspection. To discover this type of defect, the inspectors are dependent upon heat treatment and subsequent removal of the scale produced by annealing or normalizing. The oxidation of the surface of the casting in most cases affects enough of the thin skin of metal covering these areas to reveal the porosity. If, however, the oxidation has been slight, as the ideal of a neutral atmosphere in the heat-treating oven is approached, the skin may not be destroyed, and may still conceal the defect. Should the cavities be deep seated, it would require an abnormal oxidation to disclose them.

Many precautions are taken to prevent the occurrence of porosity. Analysis specifications are established to produce properly deoxidized metal in the ladle. Regardless of precautions taken in other matters, steel improperly deoxidized will invariably produce castings that have porosity or blow-holes. Skilled, careful melters, having their own knowledge checked by laboratory reports, are able to follow closely the standards set, so that the occurrence of porosity from this source is not frequent.

Deoxidizing Agents Eliminate Porosity

The deoxidizing agents, manganese and silicon, are effective in helping to eliminate porosity. Some of the steps that may be taken in "killing" the steel have a



Fig. 1 (Left) Is a Case of Hidden Porosity, While One of the Other Two Castings, Fig. 2, Shows How Occult Shrinkage Cavities Occur



THE author of the paper, of which this is an abstract, is works manager of the Michigan Steel Casting Co, Detroit, affiliated with the Electric Steel Founders' Research Group. The other companies belonging to the group are the Fort Pitt Steel Casting Co. McKeesport, Pa.; Lebanon Steel Foundry, Lebanon, Pa.; Nugent Steel Castings Co., Chicago, and the Sivyer Steel Casting Co., Milwaukee.

The paper was prepared for presentation before a meeting of sales representatives of the group plants, assembled to discuss operating problems that affect merchandising efforts, for the intelligent application of the latter. Permission to publish an abstract from the paper has been obtained from the research group.

decided influence upon the creation of other defects, while preventing porosity.

The bonding materials added to the sand must be of high quality, and evolve as little gas as is consistent with their characteristic properties. They must be so thoroughly distributed that their maximum bonding powers are developed, yet leaving the sand open to permit the escape of the gas generated in pouring. The quality of the ingredients as well as the properties of the molding mixture must be checked at frequent intervals. Vigilance must be exercised constantly to maintain the proportions established as standard. The quantity of water required to develop the cohesive properties of the mixture must be regulated in order that it may not exceed the limits of safety.

The molding operation must include, as a part of its routine, the creation of openings to aid in the rapid removal of gases. The metal, properly deoxidized as it leaves the furnace, is exposed to oxidizing influences as it is transferred from the large ladle into the shank pots, and as it is poured from the pots into the mold. To care for this final oxidation, auxiliary additions of the deoxidizers, manganese and silicon, are not feasible, and small, very carefully regulated amounts of aluminum are added to the metal. This practice is usually effective.

Summarizing, castings free from porosity result from pouring properly deoxidized metal into sand molds which have the correct moisture content; which have suitable bonding materials properly distributed; which are made from mixtures devoid of foundry rubbish; and which will permit the escape of gases as the result of what is termed their permeable quality, supplemented often by channels provided for venting. Fully appreciating these facts, the group foundries are constantly reducing the controllable variations to which the materials and operations involved are subject, by strict adherence to practices found desirable as the result of technical cooperation.

Shrinkage Cavities

SHRINKAGE cavities in apparently sound castings are sources of great annoyance because of the ease with which they escape detection in ordinary inspection. Surface oxidation, such as occurs in normal heat treatment, seldom reveals the presence of shrink holes,

as the manner of their formation tends to surround them with a relatively thick, unbroken covering of metal.

There is but one cause of shrink cavities—an insufficient supply of liquid metal with which to satisfy the demands of contraction in cooling. There are, however, a variety of circumstances that determine their position and extent. These have to do with the design of the casting, the location and form of the feeding heads, the position of the mold, the size of fillets, the interposition of small bodies of sand incapable of radiating the heat produced in them, and any other condition that interrupts the normal solidification and feeding of sections.

The casting, of which a section is shown in Fig. 2, was the first made on the initial order from a customer whose business had been solicited over a long period. Great care was exercised in the production of this order, and the section shown at the left was obtained after sawing one of the castings as a test, prior to making the shipment. The satisfaction of the customer was expressed in the form of a duplicate order.

The second order, apparently made as was the first, passed through the production routine to final rigid inspection. Here a slight cavity over one of the bosses was noted, and the casting was sent to the welder to be repaired. The workman opened up the cavities shown to the right in the photograph. All the castings were then explored, and revealed the same condition. Investigation developed the fact that the molder had substituted a cope section which was two inches lower than that used in molding the first order.

The reduction in the height of the riser had so hastened its cooling that its neck and a portion of the boss directly under it had solidified before freezing in the boss had been completed. The shrink cavity was produced because this heavy section was unable to secure its requirement of liquid metal. Had it not been for the fortunate discovery of this condition, defective castings would have been delivered to the customer.

Wrong Patterns Prevent Feeding

The illustration in Fig. 3 is that of an important casting as it was made from a pattern, wrongly con-

(Continued on page 60)



Fig. 3 (Left) Illustrates Small Defects Caused by Wrong Patterns. The bad effect of improper cores is shown by Fig. 4 (Center), while Fig. 5 represents an unusual blow-hole not always readily detected

Machinery Exports Decline

May Shows Drop of 16 Per Cent from April—First Five Months One-Sixth Above Last Year—Imports Continue Large

WASHINGTON, June 29.—Declining approximately \$6,000,000, exports of machinery in May were valued at \$32,707,863, as against \$38,755,467 in April. For the 11 months ended May, machinery exports were valued at \$367,875,235, a gain of almost \$58,000,000 over the corresponding period of last year with a total of \$309,976,724. Exports of power-driven metal-working machinery listed in THE IRON AGE table totaled 786 units, valued at \$484,442, in May, as against 1213, valued at \$697,714, in April.

Imports of machinery in May were valued at \$1,494,156, compared with \$1,814,021 in April. For the 11 months ended May, 1926, machinery imports were valued at \$13,929,017, as against \$9,486,608 for the corresponding period ended May, 1925. It will be seen from these figures that the gain in machinery imports, which has prevailed for some time, is consistent and progressive.

Exports of machinery in May of last year and the present year were closer together from the point of value, outgoing shipments in May, 1925, being valued at \$32,164,865, but there is a wide variance in values as to individual items. One of the striking gains made in May of the present year, when compared with May of last year, related to agricultural machinery and implements. The May, 1926, value was \$8,297,354, against \$6,002,438 a year ago. On the other hand, there were some sharp declines, such as in the case of automobile and other internal combustion engines, which were valued at \$2,016,402 in May of the current year, and \$2,585,262 in May of last year. Exports of

mining and quarrying machinery in May of the present year increased to \$1,085,862, as against \$836,683 in May of 1925, and of textile machinery from \$733,207 to \$987,021.

While exports of agricultural machinery have been reflecting a gain, it is also true that imports of this class of foreign equipment have shown heavy increases. In May of the present year imports of agricultural machinery and implements were valued at \$700,964, as against \$270,855 in May of last year. For the 11 months ended May, 1926, this class of imports was valued at \$3,997,384, a gain of more than \$1,360,000 over the same period ended May, 1925, with a value of \$2,636,398. Sharp increases also were made in imports of "other machinery." The May, 1926, value was \$531,310, as against \$305,355 in May of last year. For the 11 months ended May, 1926, the value was almost double that for the corresponding period ended May, 1925, the respective totals having been \$6,798,091 and \$3,645,377.

Locomotive exports in May, 1926, valued at \$304,650, went mostly to Central America, which took 10, with a value of \$219,700, while for the 11 months ended with May, Central America took 14 American locomotives, valued at \$260,800. The total value of this class of exports for the period named was \$6,063,855.

Exports of sewing machines in May, 1926, were

(Concluded on page 52)

United States Exports and Imports of Machinery

	Exports of Machinery	Imports of Machinery	Exports of Metal-Working Machinery
The year 1924... 1925	\$317,040,424	\$9,711,618	\$8,644,444
January	28,117,952	803,829	845,986
February	23,215,776	814,703	707,445
March	33,932,473	999,237	1,364,930
April	33,468,086	1,167,099	1,694,761
May	32,164,865	861,655	1,230,914
June	28,746,061	935,487	1,003,325
Fiscal year	338,715,075	10,404,337	14,011,404
July	32,320,533	905,872	1,188,069
August	38,768,823	747,912	1,308,372
September	30,719,342	956,250	989,379
October	31,271,007	996,557	905,826
November	30,084,814	876,113	1,007,376
December	37,933,511	1,448,316	1,155,660
The year 1925... 1926	385,376,676	11,577,911	13,052,916
January	34,590,693	1,659,971	853,276
February	32,269,707	1,469,170	1,294,934
March	35,241,960	1,567,912	1,297,616
April	38,755,467	1,814,021	1,479,337
May	32,707,863	1,494,156	.....
Eleven months ..	367,875,235	13,929,017	.....

Imports of Machinery Into the United States (By Value)

	May		Eleven Months Ended May	
	1926	1925	1926	1925
Metal-working machine tools.....	\$46,153	\$45,369	\$357,566	\$293,472
Agricultural machinery and implements	700,964	270,855	3,997,384	2,636,398
Electrical machinery and apparatus	60,807	68,035	881,848	1,374,283
Other power generating machinery	3,188	69	24,917	32,106
Other machinery	531,310	305,355	6,798,091	3,645,377
Vehicles except agricultural ...	151,734	171,972	1,869,211	1,504,972
Total	\$1,494,156	\$861,655	\$13,929,017	\$9,486,608

Machinery Exports from the United States

	(By Value)		Eleven Months Ended May	
	May, 1926	May, 1925	May, 1926	May, 1925
Locomotives.....	\$304,650	\$594,573	\$6,063,855	\$6,402,156
Other Steam Engines.....	64,471	125,333	1,356,137	1,391,886
Boilers.....	137,194	115,192	1,673,393	1,810,044
Accessories and Parts.....	116,487	159,981	1,852,299	1,761,904
Automobile Engines.....	1,432,364	1,821,612	12,786,355	10,327,282
Other Internal Combustion Engines.....	554,038	763,650	6,996,936	6,954,880
Accessories and Parts.....	458,377	405,969	3,892,558	3,202,943
Electric Locomotives.....	95,147	43,329	1,995,707	1,426,897
Other Electric Machinery and Apparatus.....	529,909	546,665	6,461,537	6,595,455
Excavating Machinery.....	306,929	447,781	4,183,773	2,231,333
Concrete Mixers.....	70,262	60,007	766,529	620,802
Road Making Machinery.....	198,426	155,088	1,542,826	1,154,622
Elevators and Elevator Machinery.....	462,323	188,657	3,961,523	1,834,756
Mining and Quarrying Machinery.....	1,085,862	836,686	12,447,551	8,951,423
Oil-Well Machinery.....	879,604	946,421	11,718,955	7,197,869
Pumps.....	553,064	664,968	5,915,598	6,430,525
Lathes.....	100,175	233,923	2,214,876	1,626,006
Boring and Drilling Machines.....	94,026	41,344	681,785	660,448
Planers, Shapers and Slotters.....	13,526	33,010	341,295	439,668
Bending and Power Presses.....	13,643	50,448	369,534	715,342
Gear Cutters.....	51,285	40,797	624,582	538,575
Milling Machines.....	57,736	193,176	1,221,068	1,140,298
Thread Cutting and Screw Machines.....	38,224	113,944	939,035	709,697
Forging Machines.....	59,913	9,983	424,242	323,674
Sharpening and Grinding Machines.....	158,493	339,656	2,395,991	2,357,411
Other Metal-Working Machinery and Parts of.....	314,942	479,530	4,123,493	4,249,142
Textile Machinery.....	987,021	733,207	11,310,702	8,774,130
Sewing Machines.....	694,191	792,039	7,942,421	7,313,844
Shoe Machinery.....	139,617	129,960	1,162,960	1,428,688
Flour-Mill and Gristmill Machinery.....	70,794	66,262	833,511	606,581
Sugar-mill Machinery.....	220,976	405,191	7,112,814	8,459,197
Paper and Pulp Mill Machinery.....	208,487	120,064	2,173,963	1,470,296
Sawmill Machinery.....	85,096	40,306	874,143	704,830
Other Woodworking Machinery.....	121,376	127,282	1,268,216	1,249,094
Refrigerating and Ice Making Machinery.....	462,323	422,212	3,282,310	1,841,948
Air Compressors.....	552,771	387,606	4,164,521	3,050,318
Typewriters.....	1,609,386	1,541,796	17,332,308	15,259,188
Power Laundry Machinery.....	99,792	102,982	1,108,779	940,631
Typesetting Machines.....	298,023	232,225	3,314,973	3,123,481
Printing Presses.....	437,035	450,212	5,143,066	4,808,583
Agricultural Machinery and Implements.....	8,297,354	6,002,438	83,915,890	57,344,503
All Other Machinery and Parts.....	10,224,561	11,187,361	119,983,217	112,369,374
Total.....	\$32,707,863	\$32,164,865	\$367,875,235	\$309,976,724

Automatic Bolt-Pointing and Threading Machine Has New Features

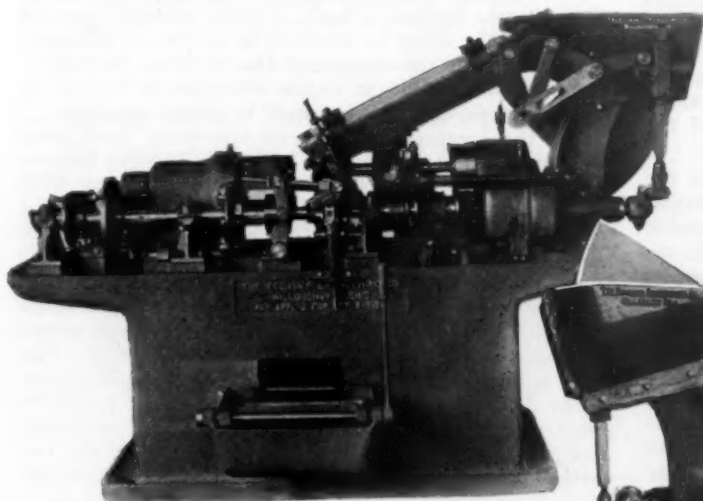
The Economy Engineering Co., Willoughby, Ohio, has redesigned its automatic bolt-pointing and threading machine and added several new features. Another size has been brought out, the machine now being made in three sizes. One new feature is that the machine is supplied, if desired, with a right-angle drive with a tight and loose pulley. The pulley shaft and loose pulley are mounted on Timken roller bearings. With the right-hand drive the machine is driven directly from the line shaft, eliminating the need of a counter-shaft. A bolt bucket is attached to the side of the base. The work drops into a pan in the bucket and oil from the bolts drains through holes in the bottom of the pan and returns to the reservoir in the bottom of the machine. The bucket is operated by a lever and, when filled, is dumped into a wheelbarrow.

Another feature not in the original machine is the positive drive to the hopper operating crank, with re-

action and, when the operation is completed, the head is returned against the tension of the spring. Two separate cams produce the four movements through which the die head passes in the threading operation. One closes the die after it has backed off a bolt and leads it forward to the next blank. The other cam opens the die after threading and returns it to the starting point. The die is fed forward by a spring tension and returned by a positive cam action. It is pointed out that feeding the pointing head and threading die under spring pressure makes them "fool proof."

Change gears are provided to permit the machine to handle different classes of work. With these the ratio between cam shaft rotation and work speed may be varied to obtain the highest efficiency in threading bolts with different numbers of threads per inch. The lead cams, also, can be changed to suit the work.

No. 1 machine threads bolts from 3/16 to 3/4 in. in diameter and from 1 to 4 in. long; No. 2 machine threads bolts from 1/4 to 9/16 in. in diameter and from 1 to 4 1/2 in. long; No. 3 machine threads bolts from 3/8



New Features on This Automatic Bolt-Pointing and Threading Machine Include Right-Angle Drive, Attached Bolt Bucket and Positive Drive to Hopper Crank



lief between the crank and the hopper. This, it is stated, increases its efficiency because, if the hopper sticks, the machine will keep in operation until all the bolts are fed out of the chute. The hopper is larger than on the original machine. All cams are now of hardened high-carbon steel. The flanged spindles are of high-carbon steel forgings.

Blanks pass from the hopper through a chute and are transferred mechanically to the chuck. The turret has three stations, loading, pointing and threading. After chucking, the turret is indexed to the pointing station, then to the threading station, and then returns to the loading position, where the finished bolt is dropped from the chuck and a new blank is substituted.

How the Blanks Are Fed In

The feed hopper has the usual double blade, which oscillates vertically and delivers the blanks to the feed chute. On this chute is a cam operated escapement or bolt separator having two rods that are alternately thrust forward between the blanks, so as to hold back the blanks, as well as allow the transfer mechanism to deliver the bottom blank to the chuck. The transfer mechanism consists of a cam-actuated lever carrying a pair of spring fingers which grip the blank and deliver it between the chuck jaws. The chuck is operated by a cam-actuated toggle mechanism which pushes a rod forward to open the jaws and withdraws the rod to close the jaws on the blank.

After a blank is placed in the chuck, the turret-locking bolt is withdrawn and a cam roller actuates a Geneva movement, indexing the turret one-third of a revolution, and bringing the blank in place to be operated upon by the pointing head. The blank just pointed is then in a position to be threaded by the die head, and the blank just threaded is carried to the loading position and dropped from the chuck.

The pointing head is fed to the work by a spring

to 3/4 in. in diameter and 1 1/4 to 5 1/2 in. long. The output of the three machines, making threads 1 in. long, is: No. 1, 3/8-in. x 3-in. bolts, 1200 per hr.; No. 2, 1/2-in. x 3-in. bolts, 1000 per hr.; No. 3, 3/4-in. x 3-in. bolts, 750 per hr.

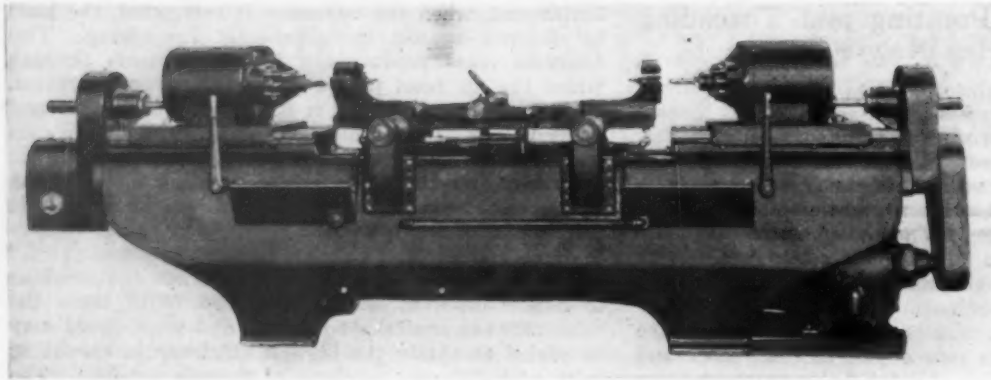
Foundry Equipment Sales

Sales of foundry equipment in May, as reported by the Foundry Equipment Manufacturers Association, Cleveland, amounted to \$425,638, a decline of 2 per cent from the \$434,626 of April, and a gain of 22 per cent over the \$332,125 of May, 1925. For the first five months sales amounted to \$2,230,209, a gain of 23 per cent over the 1925 amount of \$1,813,371.

Shipments in May at \$415,082 showed a gain of 3 per cent over April's \$402,494 and of 2 per cent over the \$407,201 of May, 1925. Total shipments for the first five months were \$2,210,612, or 31 per cent more than the \$1,685,854 of the first five months of last year.

Orders on hand June 1 aggregated \$524,382, the highest figure since March 1. On May 1 the total was \$506,214.

Freight traffic on Class 1 railroads in the United States during the first four months of 1926 was the greatest on record. It amounted to 148,065,839,000 net ton-miles, an increase of 1.2 per cent over the best previous record, which was in the first four months of 1923. April, with 36,316,958,000 net ton-miles, showed a decrease of 5.2 per cent from the best previous April on record, which was in 1923.



Machine Designed to Bore Roller Bearing Seats in Rear Axles and, at the Same Time, to Drill Two Groups of Holes for Attaching the Brake Units

Double-End Drilling, Boring and Reaming Machines

A machine for boring the roller bearing seats in rear axles has recently been developed by the Hoefer Mfg. Co., Freeport, Ill., for a manufacturer of automobile axles. In addition to the machining of the roller bearing seats, the tool at the same time drills two groups of holes used for attaching the brake units. Accuracy and rapidity of production were two of the requirements of this equipment.

Mounted on a substantial bed designed to give the desired strength and rigidity, the machining elements are as follows: Two horizontal heads, each containing two form cutters for the roughing and finishing, respectively, of the surfaces to be machined; the spindles holding these cutters are provided with longitudinal adjustment which, it is claimed, not only permits accurate setting for the depth of the cut, but also compensates for the grinding of the tools; in addition a cluster of eight drills surrounds the roughing tool in each head so that, while the rough boring operation is in process, two groups of eight holes are being drilled in each end of the rear axle.

Power is derived from an electric motor mounted within the base of the machine and is transmitted to the main spindle through a set of sprockets and silent chain. Power from the main shaft is transmitted to each head through spur gears, while spindle speeds suitable for the work to be performed are obtained through gear changes within the heads.

The spindle bearings are of the ball bearing type so that friction may be reduced to a minimum. Spindles and gears are made of heat treated steel.

The work-holding fixture is mounted in the center of the machine. The main part or base of the fixture slides on two horizontal bars. Lateral motion from one spindle to the other is obtained by means of the horizontal lever in the center of the machine through a cam action. Motion in either direction is limited by positive stops, alining the work in proper position.

As the locating surfaces on the work itself were very limited and as the work had to be brought into accurate alinement, two movable locating units were mounted on the fixture base, these being operated by a double-handle lever. By this lever the units can be moved either in or out. The tool steel bushings which locate the work in both of these holding units are also used for pilot bushings for the tools in the heads, while a group of drill bushings surrounding the large center bushing acts as guide bushings for the drills. The work is placed in this fixture and with a rapid motion of the double-handle lever is centralized and locked in place. The fixture is then moved to its first operating position and the feed is engaged by either of the two vertical handles on the ends of the machine. These two handles are connected for the convenience of the operator. The feed is obtained through a set of cams mounted on one shaft running the length of the machine. These cams are arranged for the following cycle of operations: 1. Rapid approach; 2, cutting speed; 3, rapid reverse; 4, dwell. At the end of each cycle the feed is automatically disengaged.

Springfield Heavy-Duty Double-Head Face Grinder

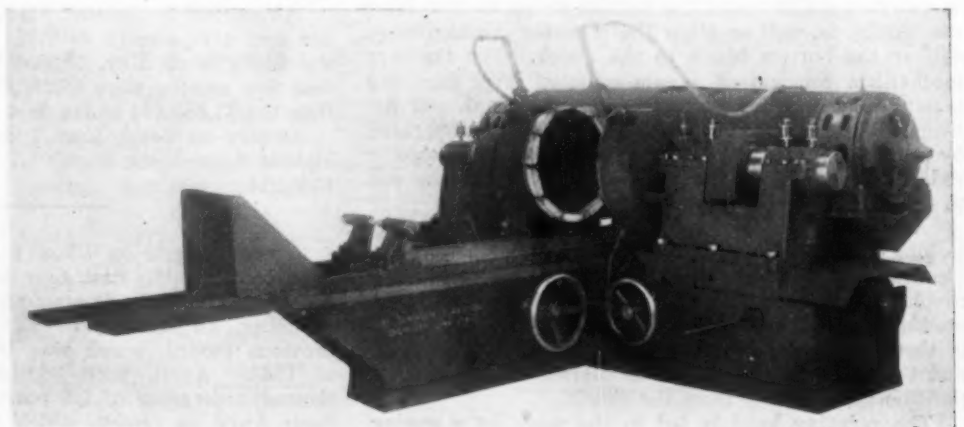
A heavy-duty double-head face grinder has been built by the Springfield Mfg. Co., Bridgeport, Conn., for the simultaneous grinding of two opposite sides of a casting.

The reciprocating table has a working surface of 84 in. in length and grinds work up to 36 in. between the grinding wheels. Two new Springfield 30-in. sectional chucks are used, supported and driven by spin-

dles 6 in. in diameter. These are provided with ball bearings for taking the thrust of the grinding wheel. The sectional grinding wheel chucks have been designed to take the standard shapes of abrasive blocks, which are furnished by the various grinding wheel companies, and either silicate or vitrified blocks may be used.

The chuck proper is built in two sections; the outer portion or ring, which holds the abrasive segments, is made from a steel casting which is bolted to a heavy spider, dish shaped at the center and heavily braced,

Floating Type Chuck Jaws Feature This Heavy-Duty, Double-Face Grinder. Compensation for warpage of segments and screw-operated feeding device provide proper adjustment



forming the hub. This style of construction is found to reduce to a minimum any spring and distortion at this point.

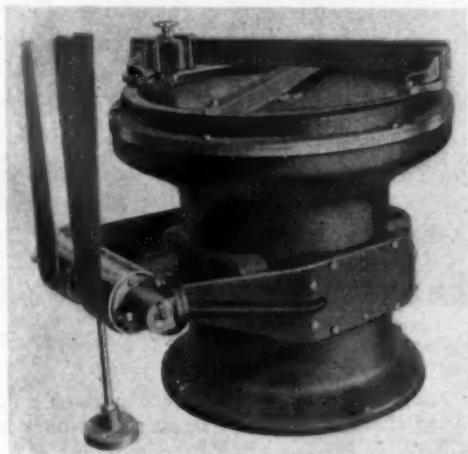
The chuck jaws are a floating type to compensate for warpage in the segments and each jaw is provided with a screw-operated device for feeding the blocks forward as they become worn. This method of adjustment serves to do away with the necessity of using blocking pieces for keeping the abrasive blocks in proper cutting position. A brace type of wrench is used for operating the feeding device, and the operator can, by counting the number of turns, feed each block forward the same distance. A sheet metal plate covers the adjusting and clamping mechanism, thus to keep these parts clean and free from the water and ground off material.

Each grinding wheel is driven by a 40-hp. motor connected to the wheel spindle by means of a silent chain. The operator has control of the machine from either side. The wheel heads can be operated singly, or can be locked together by a positive locking arrangement. Each wheel head is equipped with a lever for cutting in, or out, either head, or locking both together.

The machine, complete with motors, weighs about 23,000 lb.

Develops 30-In. Horizontal Disk Grinder

The Gardner Machine Co., Beloit, Wis., has developed a horizontal grinding machine carrying a 30-in. disk wheel. It is designed to meet the need for a smaller machine which would economize in floor space and at the same time handle work not large enough



Disk Grinder With 30-In. Wheel Supplements the 53-In. Line

to necessitate a 53-in. cutting member, as made by the company for fifteen years.

The steel disk wheel of this grinder, here illustrated, is mounted on a heavy supporting flange, 16 in. in diameter, which is machined and balanced and then fitted and keyed to the tapered end of the vertical driving spindle. The spindle itself is of large diameter, turned from crucible steel, and ground to close limits. It is mounted on oversize radial and thrust ball bearings having oil level lubrication.

The grinder occupies a floor space 38 x 46 in., and weighs approximately 1650 lb. when crated for domestic shipment. It is also available in alternating-current motor drive. The motor used is of the vertical type, mounted in the base of the machine.

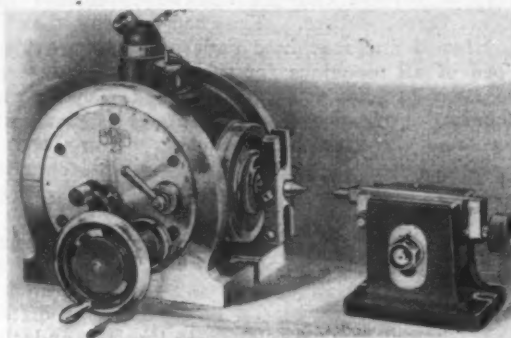
Bethlehem Relief Plan

More than 90 per cent of the 70,000 employees of the Bethlehem Steel Corporation applied last month for participation in the relief plan announced in April. This was described briefly on page 1467 of THE IRON AGE for May 20. It brings under one management employees' beneficial associations previously located at many subsidiary points, and provides uniform and more adequate benefits than before.

Dividing Head with Optical Adjustment

A dividing head of a high degree of accuracy has been developed in the optical works of Carl Zeiss, Jena, and is being placed on the market in this country by George Scherr Co., 142 Liberty Street, New York.

The division of the circle is obtained from a glass dial mounted directly on the spindle carrying the work. The dial is not engaged by contact, but merely looked at through a microscope giving 60 times magnification of the graduation. The dial is graduated into 360

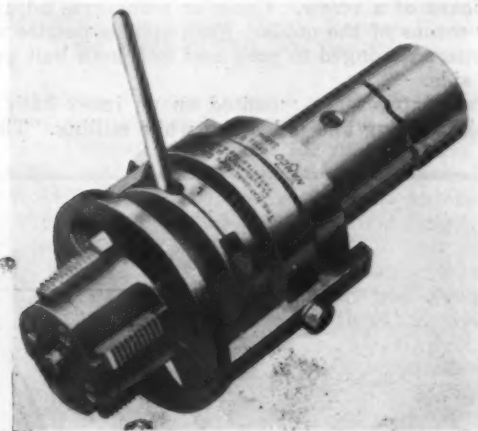


Optical Dividing Head Designed for Use on Work Requiring the Acme of Precision

deg. and the lines of this scale appear to the eye as 1 1/4 in. apart. A vernier scale of 60 minutes is projected by the ocular into the field of observation. These graduations appear to the eye as about 0.03 in. apart, and it is found possible to read fractions as close as 20 sec.

Style "S" Namco Tap

A new collapsing tap, put on the market by the National Acme Co., Cleveland, is known as style "S." One fundamental change from the older type is the use of a recessed, cup-like front plate, heavy in construction and closely fitted over the body of the tap and held in place by heavy screws. This adds to the rigidity of



Easy Size Adjustment by Screw Driver and Rigidity Are Stressed

the tool, serving to prevent the slotted portion of the body (in which the chasers are held) from springing or opening up under pressure.

Another change is a method of size adjustment, by means of a screwdriver. This is taken care of by splitting the adjusting collar through its periphery and putting in two screws at right angles to the split. These lock screws are loosened a trifle to permit the two adjusting screws to be set on the desired point, then tightened to hold the adjusting screws rigidly locked.

The chasers collapse instantaneously as the core piece is rotated to its collapsed position. The tripping

action is actuated by a tripping ring set at the desired point which, when contacting with the work, withdraws the locking pin and the chasers automatically collapse. The tap is made in 15 sizes, with a threading range for straight threads from $\frac{3}{8}$ in. to $\frac{7}{8}$ in.

Changes in Bullard Vertical Turret Lathes

The Bullard Machine Tool Co., Bridgeport, Conn., announces several changes and improvements in its vertical turret lathes. The bed casting has been strengthened and machined pads are now provided on the bed of all machines for the support of a forming attachment bracket for the side head. This forming attachment is of two types, the plate type for crowning pulleys and the machining of other similar contours, and the universal type which may be set to cover a wide range of angles as required in machining bevel gears.

Material specifications have been changed to include a cast steel main slide and all-steel turret and steel side head slide. Alemite Zerk pressure oil gun lubrication has been adopted for all bearings in external units not having a fixed relation to the bed, and, therefore, not reached by oil from the constant flow system or other unit reservoirs. The Alemite gun No. 3A is furnished as standard equipment with each machine.

Designed to Saw and Mill Automobile Connecting Rods

Sawing and milling automobile connecting rods efficiently has been a problem which the Rockford Milling Machine Co., Rockford, Ill., has sought to solve by what is called the Rigidmil. Rigidity of machine, plus rigidity and compactness of the special fixture are depended on to permit the use of a feed that takes the maximum chip per tooth and does so continuously. Connecting rods are usually made of a tough steel not easily cut. The Rigidmil takes feeds of 5 to 6 in. per min., with substantial cutter life.

Reference to the photograph will show the position of the two cutter heads—one over the other, each independently adjustable. Vertically, the two act in unison from the main adjustment at the front of the machine, by means of a screw. Cross or transverse adjustment is by means of the quills. Each spindle carries a gang of cutters arranged to split and mill both bolt pads on each side.

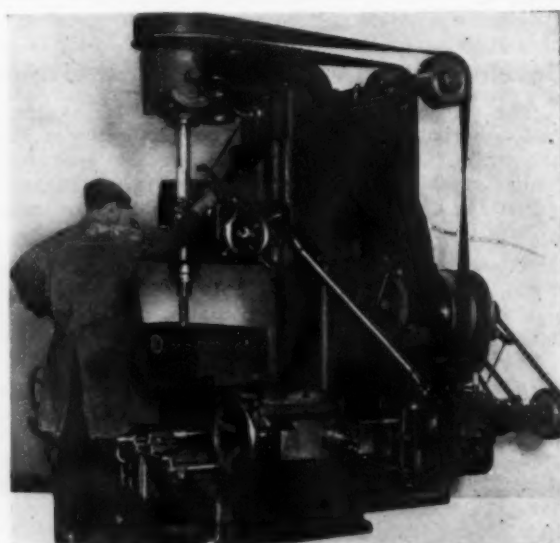
Two fixtures are mounted on an index base which permits loading and unloading while milling. The rods

are held secure on a pin registering on the small end and the large end is supported by a bar and held with a swinging floating clamp, locking the cap in place until the cutters have returned to the starting position. The purpose of the float is to prevent the caps from moving, thus preventing breakage of the cutters on the return stroke. The machine is equipped with automatic rapid traverse to effect the greatest gain for the operator.

The cycle of operation is to load the fixture at the loading position, index, engage the rapid approach and feed, load and unload the second position. At the completion of the cut the table returns automatically to the indexing position, is indexed, feed engaged and the cycle repeated.

Die Sinker or Vertical Milling Machine

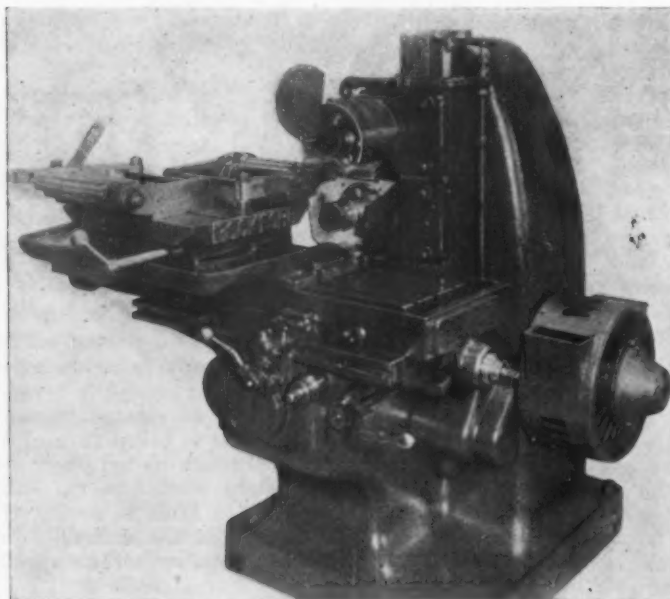
An increase in size and weight of die blocks for drop forging, together with demands of similar large work adapted for vertical milling, has led to the development of a new model die sinker or vertical milling machine by the Reed-Prentice Co., Worcester, Mass.



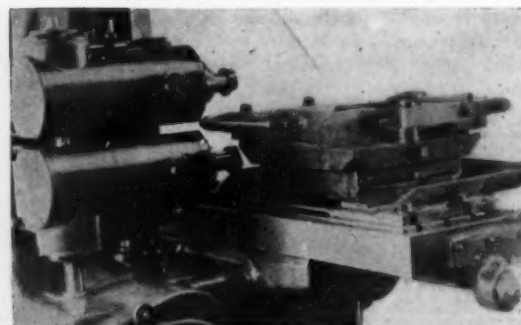
Heavy-Duty Die Sinker Adapted for Large Work

A new design, known as No. 6, incorporates all of the features of the former No. 6 Becker die sinker or vertical miller.

With increased range of operation the new machine,



Utmost Rigidity, in the Interests of Machining Accuracy, Is Claimed for This Machine. The tool heads are adjustable independently. The machine saws and mills automobile connecting rods



which is illustrated herewith, will meet modern requirements. Among its characteristics are the following: Adjustment of head on collar, 18 in.; adjustment of spindle, 10 $\frac{1}{4}$ in.; working surface of table, 20 x 72 in.; table travel, longitudinal and cross, 72 in. and 30 in.; height of table above floor, 29 in.; depth of throat, 28 $\frac{1}{2}$ in.; distance from spindle nose to table, 0 to a maximum of 30 in.; rapid traverse feed, both cross and longitudinal, 125 in. per min.

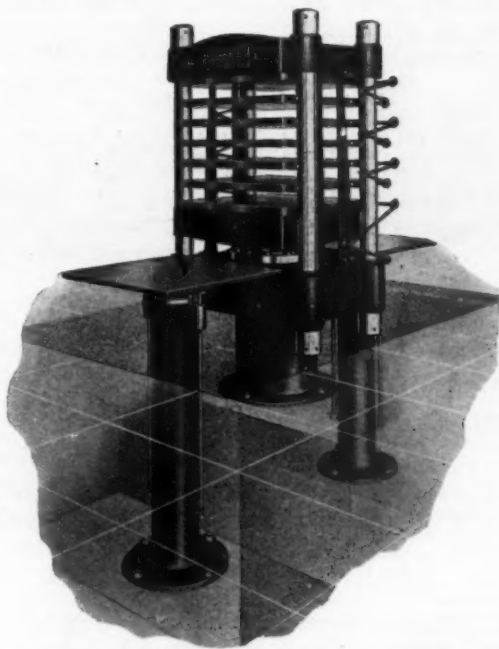
Hot Plate Press Arranged for Rapid Handling of Molds

Rapid operation is a feature of the six-opening hot plate press here shown, which has been brought out by the French Oil Mill Machinery Co., Piqua, Ohio.

The hot plates are of solid sheets of rolled steel with drilled passages, and in the particular machine shown they measure 42 in. square. At the front and rear of the press are mounted two hydraulically-operated elevating tables, these also measuring 42 in. square.

Two of these presses are used to make a complete production unit, the two machines being set side by side, with roller conveyors between the elevating tables at the front, and another roller conveyor between the elevating tables on the rear of the presses. Three sets of molds are required for the two presses. One press is started on its cycle when the other press is half through its cycle.

When one press has completed the pressing operation, the molds are pushed out of the press and stacked up on the elevating tables. At the same time a fresh



Two Presses of This Type Make a Complete Production Unit

charge of molds is pushed into the press, which is thereupon closed up, with a minimum loss of time. The discharged molds are then pushed onto the roller conveyor, one at a time, this being accomplished easily by having the elevating table at the proper height. The molds are opened and recharged and stacked on the elevating table at the other press ready for reloading this press. With this method of operation two sets of molds are always under pressure, and one set is being unloaded and reloaded. The molds always travel in the same direction.

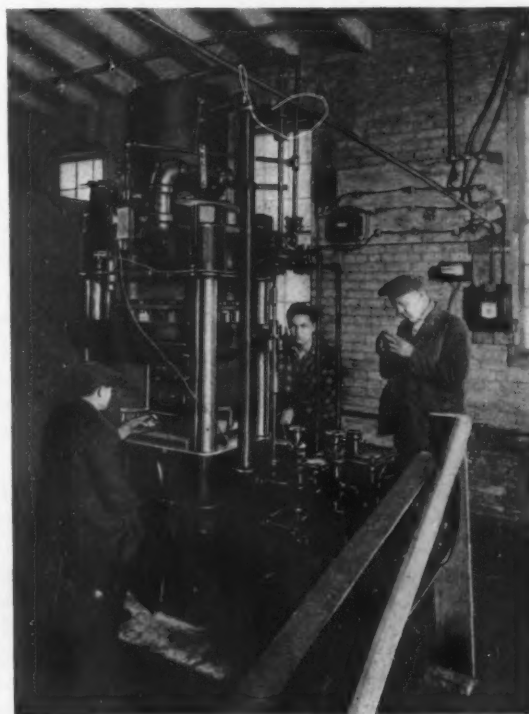
Plans and surveys are being made by the Atchison, Topeka & Santa Fe Railway, Kirchoff Building, Los Angeles, for electrifying the railroad between Los Angeles and Bakersfield, Cal., at an estimated cost of \$800,000.

Making Complete Bearings in a Press

The Hydraulic Pressed Bearing Co., Niles, Mich., to eliminate any change in the analysis of bearing metal due to heating to the molten state, has adopted a process of forming the bearings at a relatively low temperature.

For this work it uses a four-column speed press especially designed by the Oilgear Co., Milwaukee. Soft base bearings, as for line shafts, electric motors, compressors, pumps, etc., are pressed from virgin stock. The method turns out a finished bearing without requiring turning and cutting operations, and thus without waste of metal. It is claimed that blow-holes, fissures and strains are absent and that the identity of the metal is retained.

The press has a capacity of 200 tons, with a 6-in. stroke, 18-in. daylight space and 24-in. clearance be-



Rapid Approach and Quick Return Feature the Work of This 200-Ton Press

tween columns. It has a rapid approach to the work of 100 in. per min. and a quick return of 200 in. per min. The Oilgear pump, used for actuating the press, is equipped with a pressure variometer to permit convenient adjusting of the line pressure to anything between 300 and 1000 lb. per sq. in. The press is designed to make ten 6-in. strokes of 200 tons pressure per min. A maximum desired pressure to insure an accurately formed and sized bearing may be held to allow cooling for an indefinite length of time with no pulsation of pressure variation.

The press is operated by two hand levers placed so that the hand cannot be caught under the ram. The press and pump are a complete unit, requiring no additional compressors, pressure lines or accumulators.

Steel Furniture Shipments Still Heavy

While May orders received for steel furniture showed the lowest total of any month yet this year, the figure was higher than for any of the first five months of last year. At \$2,213,060, the total compares with \$2,356,403 in April and with \$1,855,552 in May last year. For the first five months a gain is registered this year of 17 per cent over 1925, the total having been \$11,783,502, against \$10,025,936 a year ago.

Steel shelving ordered in May amounted to \$580,995. This again was the lowest for any month this year, April having shown a total of \$704,432. The figure was higher, however, than for the corresponding month last year, with \$523,426.

Where Steel Exports Went in July-May

Canada Took 395,352 Tons of Nine Leading Items in Eleven Months—Japan Holds Second Position with 144,657 Tons, Followed by Cuba, 58,280 Tons— Mexico Took 33,008 Tons

Exports from United States, by Countries of Destination

(In Gross Tons)

Steel Plates					Galvanized Sheets					Black Steel Sheets				
	May		Eleven Months Ended May			May		Eleven Months Ended May			May		Eleven Months Ended May	
	1926	1925	1926	1925		1926	1925	1926	1925		1926	1925	1926	1925
Total	11,155	11,073	104,804	77,796	Total	13,196	10,004	147,484	135,184	Total	17,415	5,284	137,535	97,266
Canada	10,226	7,383	89,708	59,892	Canada	3,386	2,770	26,271	17,801	Canada	6,258	4,462	47,711	32,303
Japan*	.....	1	468	1,194	Japan*	226	.....	5,485	8,898	Japan*	8,831	124	72,334	55,590
Cuba	58	31	1,569	856	Cuba	955	725	11,423	10,485	Cuba	31	58	691	735
Philippine Islands	235	106	1,173	956	Philippine Islands	1,844	1,412	17,974	13,860	Philippine Islands	472	62	1,014	516
Mexico	163	83	1,551	924	Mexico	788	866	9,118	6,754	Mexico	103	.....	426	.....
Argentina	.....	.....	.....	.....	Argentina	420	615	7,193	42,417	Argentina	62	59	999	830
Chile	.....	.....	.....	.....	Chile	377	32	1,729	1,640	Chile	169	.....	.....	.....
Colombia	.....	.....	.....	.....	Colombia	422	350	7,382	5,328	Colombia	.....	.....	.....	.....
Central America	.....	.....	.....	.....	Central America	345	514	345	4,357	Central America	.....	.....	.....	.....

Steel Rails					Barbed Wire					Plain and Galvanized Wire				
	May		Eleven Months Ended May			May		Eleven Months Ended May			May		Eleven Months Ended May	
	1926	1925	1926	1925		1926	1925	1926	1925		1926	1925	1926	1925
Total	11,405	16,520	132,789	164,833	Total	4,925	6,939	60,154	80,133	Total	3,394	3,385	33,583	28,442
Canada	3,372	3,724	23,692	13,397	Canada	672	459	3,273	4,877	Canada	1,336	1,306	12,071	9,738
Japan*	1,624	237	16,844	5,926	Japan*	.....	.....	.....	.....	Japan*	376	53	1,072	692
Cuba	114	10,001	22,484	51,798	Cuba	187	499	3,609	1,453	Cuba	123	172	1,514	1,907
Philippine Islands	.....	.....	4,786	3,820	Philippine Islands	.....	.....	4,379	.....	Philippine Islands	.....	.....	4,992	3,505
Mexico	40	126	4,318	5,423	Mexico	603	601	5,305	5,361	Mexico	559	399	4,992	3,505
Argentina	.....	.....	.....	.....	Argentina	217	1,279	5,701	8,404	Argentina	217	12	3,319	480
Chile	1,147	960	5,292	5,928	Chile	.....	.....	.....	.....	Chile	34	46	84	133
Colombia	.....	.....	5,375	5,065	Colombia	442	227	6,139	6,344	Colombia	69	.....	.....	87
Brazil	385	64	4,875	6,627	Brazil	264	1,987	9,587	24,165	Brazil	62	.....	62	2,395
Honduras	.....	.....	.....	1,817	Honduras	.....	.....	.....	.....	Honduras	.....	.....	.....	.....
Australia	.....	.....	.....	.....	Australia	94	62	1,328	2,129	Australia	324	240	324	5,683
British South Africa	.....	.....	.....	.....	British South Africa	608	126	3,783	5,255	British South Africa	.....	.....	.....	.....

Tin Plate					Plain Heavy Structural Material					Steel Bars				
	May		Eleven Months Ended May			May		Eleven Months Ended May			May		Eleven Months Ended May	
	1926	1925	1926	1925		1926	1925	1926	1925		1926	1925	1926	1925
Total	13,408	10,214	169,516	129,155	Total	15,618	6,190	121,046	91,198	Total	10,529	9,118	115,610	89,570
Canada	3,171	3,662	31,587	24,257	Canada	12,110	4,198	91,192	66,851	Canada	5,866	5,676	69,847	42,294
Japan*	3,192	931	44,877	47,782	Japan*	.....	.....	2,038	3,906	Japan*	375	222	1,539	1,947
Cuba	169	74	3,047	4,788	Cuba	460	711	8,928	11,434	Cuba	322	334	5,015	8,890
Mexico	924	543	5,281	4,513	Mexico	.....	.....	.....	.....	Mexico	.....	.....	2,017	.....
Argentina	231	448	6,035	7,793	Argentina	565	259	2,582	3,415	Argentina	.....	.....	.....	.....
Chile	302	211	6,083	3,820	Chile	.....	.....	.....	.....	Chile	1,427	1,496	14,388	14,892
United Kingdom	.....	.....	.....	.....	United Kingdom	.....	.....	.....	.....	United Kingdom	.....	.....	.....	.....
China	1,424	1,448	20,033	6,130	China	.....	.....	.....	.....	China	.....	.....	.....	.....
British India	.....	.....	9,854	5,390	British India	.....	.....	.....	.....	British India	.....	.....	.....	.....
Italy	1,233	1,722	6,808	4,616	Italy	.....	.....	.....	.....	Italy	.....	.....	.....	.....

*Includes Chosen.

Destination of Iron and Steel Products Exported From the United States

(In Gross Tons)

To	May, 1926	January Through May		To	May, 1926	January Through May	
		1926	1925			1926	1925
Belgium	45	1,005	4,807	West Indies	8,521	50,111	65,939
Denmark	148	491	508	Argentina	2,182	26,398	56,071
Finland	51	784	813	Bolivia	18	425	1,040
France	778	6,691	2,021	Brazil	2,770	16,526	18,894
Germany	5	794	1,468	Chile	5,773	24,604	19,990
Greece	83	1,143	1,126	Colombia	5,730	26,715	23,403
Italy	3,682	18,808	16,077	Ecuador	257	788	1,144
Netherlands	225	681	1,155	British Guiana	27	106	296
Norway	116	767	1,486	Dutch Guiana	58	454	18
Portugal	1	373	266	Peru	2,453	16,865	6,162
Romania	208	1,723	147	Uruguay	1,899	3,504	2,054
Soviet Russia in Europe	4	2,806	98	Venezuela	3,487	27,832	14,112
Spain	23	522	1,880	Other South America	3	70	70
Sweden	18	284	241	South America	24,157	144,287	143,254
Switzerland	57	84	61	India	2,706	15,240	8,077
Turkey in Europe	36	672	976	British Malaya	656	4,718	2,097
United Kingdom	3,037	21,183	19,085	China	3,740	15,751	12,075
Other Europe	9	512	299	Hongkong	110	785	1,671
Europe	8,526	59,323	52,514	Iraq	522	582	.....
Canada	76,797	329,301	237,374	Japan and Chosen	21,976	118,241	49,764
Costa Rica	119	1,086	1,657	Kwangtung	167	3,698	772
Guatemala	592	6,671	2,628	Palestine and Syria	41	134	200
Honduras	303	1,825	2,766	Persia	43	43	1,038
Nicaragua	254	3,199	2,079	Other Asia	32	190	116
Panama	470	3,566	4,496	Asia	29,993	159,382	75,810
Salvador	4,629	9,725	8,143	Australia	1,462	9,132	9,401
Mexico	7,613	41,015	50,333	New Zealand	134	1,701	767
Newfoundland	61	260	955	Philippine Islands	6,500	27,198	21,375
Other North America	24	72	59	Java and Madura	740	4,577	3,415
North and Central America	90,862	396,720	310,490	Other Dutch East Indies	1,405	10,388	4,324
Bermuda	20	73	83	Other Oceania	34	98	105
Jamaica	73	577	544	Oceania	10,275	53,094	39,387
Trinidad and Tobago	837	2,794	1,933	British South Africa	1,001	3,089	16,201
Other British West Indies	208	437	420	Egypt	1	2,190	1,195
Cuba	5,723	38,632	58,489	Portuguese East Africa	73	708	488
Dominican Republic	381	2,437	2,231	Other Africa	9	173	170
Dutch West Indies	1,061	3,028	1,250	Africa	1,084	6,160	18,054
West Indies	5	26	17	Total	173,418	869,077	705,448
Haiti	184	1,763	873				
Virgin Islands of the United States	29	284	99				

In This Issue

How can brittleness in boiler steel be combated?—Inside caulking or the control of the chemical condition of the water will help.—Page 4.

Will Russia adopt European equipment?—American methods and machinery are favored, but Russia's chief difficulty now is in getting credit, and unless that is granted here our export business with that country may suffer.—Page 3.

Heat-treaters can use the magnetic test to good advantage.—When quenching temperature is known, the correct drawing temperature can be determined quite accurately by the magnetic test.—Page 7.

Truck wheels punched from I beams have considerable strength.—Bureau of Standards comments on exceptional resistance to side thrust and skid stresses. The wheels are produced economically and the method of manufacture may be employed for other products.—Page 9.

Are blow holes in steel castings sometimes due to cold metal?—Some steel foundrymen believe this defect is caused occasionally by the rapid solidifying of the metal preventing the normal escape of gases.—Page 60.

May machinery exports are 16 per cent under April.—Value for May was 32.7 million dollars, which was slightly above May, 1925.—Page 14.

Testing Society takes up the question of sulphur in commercial rivet steel.—Tests prove that sulphur, at least up to 0.06 per cent, is not detrimental.—Page 5.

Incompetent industrial managers not tolerated in Russia.—American engineer finds that Soviet Government is insisting upon and is getting capable management for its industries. Looks for increase in private ownership of business, and believes that the form of government and social system eventually will not be greatly different from America's.—Page 1.

Does high chromium inhibit grain growth in stainless iron and steel?—This objectionable development, encountered in welding or riveting, is not necessarily eliminated by high chromium, says speaker at meeting of Testing Materials Society.—Page 6.

Passing of the skilled molder places heavier burden on steel foundry management.—With the semi-skilled class of labor available nowadays the most careful guidance is needed to guard against defects in castings.—Page 62.

Eliminates one error in torsion testing.—New twist meter, quickly and accurately attached, avoids errors in twist readings due to bending of specimens.—Page 6.

Germans defend export bounty on completely manufactured articles.—Contend that it is necessary to counterbalance a "world price" resulting from the advantage French and Belgian producers enjoy because of the depreciated franc.—Page 59.

Questions value of test bar in casting tests.—British metallurgist declares that the bar represents only the metal in the ladle and seldom reflects accurately the strength of the casting.—Page 8.

Cincinnati molders' strike is settled.—Compromise on an advance of 50 cents per day, bringing daily wage up to \$7.50.—Page 11.

May iron and steel exports lower; imports highest in three years.—173,418 gross tons was shipped out of the country in May, 11 per cent below April total. Imports totaled 108,731 gross tons, slightly above preceding month.—Page 56.

Steel output sets new record for half-year.—Total for the first six months of 1926 will approximate 24,250,000 gross tons of ingots, nearly one million tons above the previous half-year high record established in 1923.—Page 23.

June pig iron output declined 4 per cent.—Estimated daily output averaged 107,825 tons, 4479 tons below the May average. The number of furnaces in blast July 1 is 221, making a net loss of 7 for the month.—Page 31.

Prophesies a new prosperity for England when the coal situation is remedied.—The buying power of the masses of English people is steadily expanding; the general strike is past; wages are increasing; recognition for the need of modern manufacturing methods is growing; Colonel Scott predicts a greater English market for certain American manufactures.—Page 27.

The Iron Age, July 1, 1926

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Prospects in England and Russia

READERS will surely join with us in welcoming the contributions appearing in this issue from Colonel Scott and Mr. Marshall. Both are dependable accounts of industrial and social conditions, the one in Britain and the other in Russia. It is for the light they throw on the future as well as the present that they are very much worth while.

It happens that both contain a forecasting note, promising a new era of industrial well-being. Also both look for the United States to have a part in furthering the betterment. This has no small commercial significance. These articles are noteworthy for being broad in viewpoint and at the same time of specific interest to the metal and metal-working industries.

For News Summary See Reverse Side

Ingots Make Record for Half-Year

Total for First Six Months Exceeds 24,000,000 Tons—Gain Over Previous High Record, Nearly 1,000,000 Tons

ON the basis of returns for the first five months and a close estimate for June, production of steel ingots for the first half of 1926 will make a new record for any half-year, at about 24,250,000 gross tons. The previous record, which was for the first half of 1923, was 23,326,965 tons. This is the twelfth time that a half-year has exceeded 20,000,000 tons, as is shown by the table.

While the curves show that production has been on the down grade since the record-breaking output of March, it nevertheless is on a much higher plane than has been the case in previous years. It would take much more of a slump, through the second half-year,

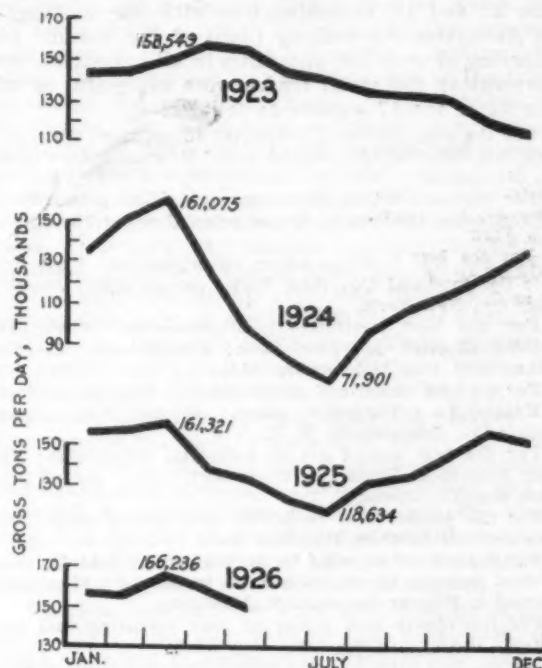
Production of Steel Ingots by Half-Years
(Only Those Years Showing 20,000,000-Ton Half-Years Are Included—Gross Tons)

	First Half	Second Half	Year
1916	*20,761,815	20,640,102	*41,401,917
1917	*22,169,646	21,449,554	*43,619,200
1918	20,519,904	*22,531,118	43,051,022
1920	20,937,359	19,944,033	40,881,392
1923	*23,326,965	20,158,700	43,485,665
1925	22,383,071	21,757,667	*44,140,738
1926	*24,250,000	.....	.....

*Successive new high records for a half-year or a year.

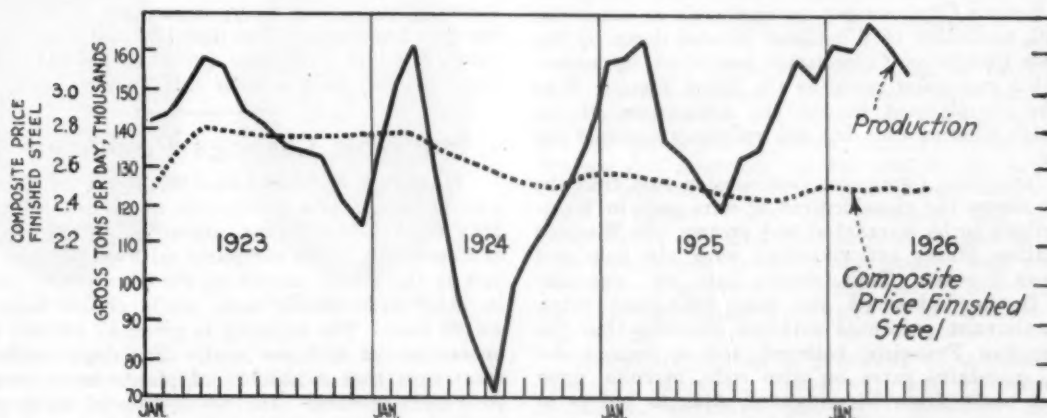
than appears probable at this writing to reduce the year's total to less than was reached last year, when a high annual record was made. If the months of the second half average 3,400,000 tons—a figure considerably lower than any month in the first half has shown—a new year's record will be made.

One diagram shows the history of the past three and one-half years of both ingot production and finished steel composite price. Each year has shown a drop in the composite price, beginning with the drop in



Each Year Has Shown a Spring Decline, Making the Situation Look Like a "Seasonal Trend"

ingot production in the spring. These drops, however, have been decidedly moderate, if we except that of 1924, and recent tendencies have been upward. The other diagram shows the three and one-half years of production plotted one above the other, so that the effect of parallelism, which has been remarked many times, may be more clearly noted.



Prices Have Declined Each Year at the Time Production Has Slackened, But These Recessions Have Been Moderate in Extent and Slow in Developing

The schedule of the next installments of the *Business Analysis and Forecast*, by Dr. Lewis H. Haney, Director, New York University Bureau of Business Research, is as follows: July 15—Activity in Steel Consuming Industries; July 22—Position of Iron and Steel Producers; July 29—General Business Outlook.

INDUSTRIAL ADVERTISERS' SHOW

Metal-Working Companies Win Prizes in Displays Before Association

Many metal-working companies were represented at the annual exhibit and convention of the National Industrial Advertisers' Association in Philadelphia, June 22 and 23, in conjunction with the meetings of the Associated Advertising Clubs of the World. In a gathering of over 200 companies in all industries, those representing the metal trades were successful in winning 12 of the 17 awards as follows:

For the best exhibit of industrial advertising: First prize, Link Belt Co., Chicago; second prize, Milwaukee Corrugating Co., Milwaukee.

For the best exhibit of a campaign: First prize, Warner & Swasey Co., Cleveland; second prize, Graybar Electric Co., New York.

For the best business paper advertisement: First prize, Niles-Bement-Pond Co., New York; second prize, American Brass Co., New York.

For the best institutional advertisement: First prize, Western Electric Co., New York; second prize, American Rolling Mill Co., Middletown, Ohio.

For the best direct mail advertisement: First prize, Graton & Knight Co., Worcester, Mass.; second prize, General Electric Co., Schenectady, N. Y.

For the best use of art in industrial advertising: First prize, Bridgeport Brass Co., Bridgeport, Conn.; second prize, Rome Wire Co., Rome, N. Y.

For the exhibit that made the best use of color: First prize, Jenkins Brothers Co., New York.

For the exhibit showing throughout all its publicity work the best general tie-up, to sell its institution: First prize, Kearney & Trecker Corporation, Milwaukee.

For the twelve best pieces of copy featuring real news interest: Bakelite Corporation, New York.

For the best piece of advertising offering a product which

is neither manufactured nor processed, but is delivered in its natural and raw state: First prize, National Slate Association.

For the industrial advertisers' association making the best showing as a club: First prize, Milwaukee Association of Industrial Advertisers.

In addition to the exhibits of advertising plans and campaigns which occupied an entire floor in the Atlantic Building, business sessions were held at the Hotel Sylvania, where papers were presented and discussed. Among the speakers were: Thomas A. Mitten, Philadelphia Rapid Transit Co.; Bennett Chapple, American Rolling Mill Co.; W. A. Wolff, Western Electric Co.; Victor Wilmot, general sales manager Dodge Mfg. Co.; Julius Holl, Link-Belt Co.; Keith J. Evans, Joseph T. Ryerson & Son; George Morrison, advertising manager Ingersoll-Rand Co.; George L. Erwin, Kearney & Trecker Corporation; L. G. Hewins, Van Dorn & Dutton Co.; A. D. Guion, advertising manager Bridgeport Brass Co.; R. C. Beadle, Combustion Engineering Corporation; J. N. McDonald, Anaconda Copper Mining Co.; Howard Spohn, Timken Roller Bearing Co.; S. H. Yorks, Bethlehem Steel Corporation; William Roper, Philadelphia.

Officers elected were: President, W. A. Wolff, Western Electric Co., New York; first vice-president, Ezra Clark, Clark Tractor Co., Buchanan, Mich.; second vice-president, N. S. Greensfelder, Hercules Powder Co., Wilmington, Del.; secretary, H. P. Sigwald, Milwaukee Corrugating Co.; treasurer, J. N. McDonald, Anaconda Copper Mining Co., New York.

New directors elected for one year: O. C. Dahlman, Koenig Co., Milwaukee; Bennett Chapple, American Rolling Mill Co., Middletown, Ohio; Julius Holl, Link-Belt Co., Chicago; Allen Brown, Bakelite Corporation, New York; George H. Corey, Cleveland Twist Drill Co., Cleveland.

BILLET RATES DENIED

Wire Rods Held to Be Further Along the Line of Manufacture and Take Fifth-Class Freight Rates

WASHINGTON, June 29.—Rates on wire rods in coils, carloads, from Chicago to Acme and Peoria, Ill., Black Rock and Harriet, N. Y., Portsmouth and New Boston, Ohio, and from Johnstown, Pittsburgh and Monessen, Pa., to Kansas City, are not unreasonable or otherwise unlawful, according to a decision handed down by the Interstate Commerce Commission last week in connection with a complaint made by the Black Steel & Wire Co. The complainant sought the application of the billet rates to wire rods but the railroads opposed the proposal.

The Interstate Commerce Commission said that the evidence shows the classification of wire rods in Western territory to be warranted and proper. In Western classification billets are classified with pig iron and take Class D rates. Rods, sheets, bars, etc., are considered further advanced and take fifth-class rates. The complainant presented evidence showing that the St. Louis-San Francisco railroad, not a present defendant, maintains rates on wire rods, in coils, upon the billet basis, from Birmingham, Ala., to points in Western territory over its own lines and also in connection with lines of the defendants, including the Atchison, Topeka & Santa Fe Railway and others. In discussing the suggested classification of wire rods with billets, the commission said:

While it may be possible to draw the line between rods, in coils, and other articles in the iron and steel list, the evidence shows that defendants have difficulty in doing so. Rods other than wire, such as bolt, nail and rivet rods, may be shipped in coils. Complainant's witness testifies that it is not practicable to produce articles other than wire rods, in coils, in wire-rod mills. This does not refute the evidence that, so far as transportation characteristics are concerned, there is no great difference between wire rods and other kinds of rods and that it is practically impossible

from a classification standpoint to draw a line between the different commodities after they have passed the billet stage.

It was shown that the application of the billet rate on wire rods, in coils, in Central territory, was accorded years ago and has more or less grown up with the industry. The carriers west of the river do not wish to extend the billet base and are unable to change the present basis in Central territory. The Western carriers, it is stated, believe that they have drawn the line of demarcation between billets and wire rods logically and practically, regardless of what Eastern carriers have done. The decision said that the Eastern carriers admit that they probably are making a mistake in applying the billet rate on wire rods.

Malleable Castings Production Less

WASHINGTON, June 28.—With five of the 139 reporting plants idle, production of malleable castings in May totaled 60,128 tons, according to the Department of Commerce. This compares with 66,733 tons in April and is the lowest month so far this year. Shipments in May were 59,151 tons, while orders amounted to 49,179 tons. The capacity is given as 108,891 tons and operations at 55.2 per cent. The department's statement says that a number of plants have been unable to report orders. The production of such plants in 1925 was 41,983 tons and in May of the present year, 4365 tons.

Capacity for May was based on the following formula: "Total number of units of molding floor space, times the average production per molder per day per unit of floor space, times number of actual working days per month. In no case should productive capacity based on floor space exceed melting or annealing capacity."

Two new seamless tube mills, under construction at the Campbell works of the Youngstown Sheet & Tube Co., will be ready for initial operations in July. One will roll seamless tubes up to 7 in., outside diameter, and the other from 7 in. to 13 in.

PLATE MILLS LOSING MONEY

Two Eastern Companies Testify to Unprofitable Operation in Federal Trade Commission Hearing

At least two Eastern plate manufacturers have lost money consistently since the war, according to testimony given last week at the Federal Trade Commission hearing of the Bethlehem-Midvale-Lackawanna merger case. The hearing was resumed on Monday, June 21, at the Federal Building, New York.

Case of Central Iron and Steel Co.

Robert H. Irons, president Central Iron & Steel Co., Harrisburg, Pa., said that his company had not declared a dividend since the war; that it had an actual operating deficit of \$150,000 in 1925 and one of \$195,000 in 1924. These losses make no allowance for depreciation, which is charged, he said, at a fixed amount of \$300,000 a year. Operating losses in 1921 and 1922 were about \$100,000 for each year. In 1920 and in 1923 the company made a little money on operations, but when depreciation was deducted there was a net loss.

Mr. Irons said that the total loss of the company since the war had been substantial and that these losses had been met out of surplus, but that this surplus was wiped out last year.

Asked by counsel to what he ascribed the unprofitable condition of the plate manufacturing business, Mr. Irons replied that it was because plate manufacturers cannot get enough money for their steel. The first half of this year, he said, would make a somewhat better showing for his company, due partly to better prices and also to the fact that the Central plant now makes

floor plate and sheets in addition to sheared and universal plates.

Case of Worth Steel Co.

Paul King, general sales manager of the Worth Steel Co., Claymont, Del., testified that his company has paid no dividends since the war, despite the fact that it does not cater to ordinary plate requirements, but specializes in high-quality plates, on which there are fairly large extras. He said that the company's sales average \$5 to \$10 a ton above Pittsburgh base prices, this being due to the extras and to the freight advantage the company enjoys in competition with Pittsburgh. Mr. King cited no figures as to the company's losses, but gave it as his opinion that there had been a loss every year since the war.

Herman Blicklé, vice-president Fort Pitt Bridge Works, Pittsburgh, testified that his company on fabricated steel work can compete successfully with the Bethlehem Steel Co.'s special H sections by using standard sections. Mr. Blicklé explained, however, that this was possible only on the heavier types of work.

Early in the week the Federal Trade Commission put Arne Solem, a Government statistician, on the stand to give figures he had made up from invoices of the Bethlehem plants before and after the merger. His figures were intended to show that before the merger the Bethlehem, Midvale and Lackawanna companies sold to the same customers at identical prices, and that since the merger the same conditions prevail—that is, if steel is shipped from different plants of the Bethlehem Steel Corporation it is all at the same price regardless of the mill from which it is shipped.

The hearings in New York will continue until the end of this week and possibly into next week, after which they will be resumed in Washington. The Government's case will be concluded in two or three months.

Rockford Machine Tool Companies Are Consolidated

The Rockford Milling Machine Co. and the Rockford Tool Co., both of Rockford, Ill., have been consolidated to take effect July 1 under the name of the Sundstrand

will be transferred to that plant. By rearrangement of the equipment of the two companies it is expected that manufacturing facilities will be greatly improved upon. The engineering departments, which have been operated separately, will be combined under one chief engineer.



H. L. OLSON



G. D. SUNDSTRAND

Machine Tool Co. H. L. Olson, who has served as secretary and general manager of the two companies, will continue as the executive head of the combined company. G. D. Sundstrand will continue as chief designer and will have as his assistant, C. A. Sundstrand.

The Rockford Tool Co. was organized in 1905 and the first Rockford 15-in. engine lathe was built in that year. Within the next few years the Sundstrand tool room lathe and the Sundstrand 16-in. single purpose lathe were developed.

The Rockford Milling Machine Co. was organized in 1910 and the first machine produced was a No. 3 hand miller. Over a period of 16 years the Rockford Milling Machine Co. has developed a line of milling machines for every purpose.

The Sundstrand Machine Tool Co. will occupy the present plant of the Rockford Milling Machine Co. and the machinery and equipment of the Rockford Tool Co.

Dayton Firm to Make Fabricated Steel Units for Buildings

At a sales convention last week in Dayton, Ohio, the recently organized Unit Steel Corporation of that city laid plans for the immediate placing on the market of its product, which includes fabricated steel frames for assembly on the site in the building of houses and other structures commonly constructed of wood. Urban Thies, vice-president and consulting engineer of the new company, explained to the new distributors and salesmen the making and use of the product. The manufacturing will be done in one of the buildings formerly occupied by the Barney & Smith car works.

Joseph Herzsmann is president of the corporation; Howard Marston, treasurer, and Francis Dean Schnacke, secretary and legal counsel. D. Eppelsheimer, consulting engineer of the American Rolling Mill Co., Middletown, Ohio, is one of the new directors of the concern. Besides the officers mentioned, other members of the board are Ferdinand J. Ach, Frank Hill Smith, Frederick H. Rike, Harry I. Schenck and Walter K. Jamison.

The Trumbull Cliffs Furnace Co., Warren, Ohio, has asked the Ohio State Public Utilities Commission to reduce the rate on pig iron between Warren and Canton from \$1.76 to \$1.26 per ton. It is pointed out that the \$1.26 rate prevails for longer hauls, between Canton and Youngstown, Struthers and Canton and Cleveland and Canton.

American Opportunity in Britain?

Coal Strike Will Bring Changes in British Industry with Favorable and Unfavorable Possibilities for Manufacturers in the United States

BY COL. FRANK A. SCOTT*

THE observations which follow are based on the experience of arriving in England on the morning of the general strike, continuing there and witnessing the various phases of the strike and the conclusion of the struggle, and then, for the following month, observing its effects upon English industry. While this was by no means the first visit to England, nor the initial study of her industrial conditions, apology must be made for the superficiality of impressions gained during so short a time, and under circumstances which could not possibly reflect the usual attitude of mind of industrialists, bankers, or merchants.

More Respect Than Ever for Britain

It must be said in the beginning that, whatever one's attitude toward the English people might have been before witnessing the general strike, and the way in which the government and the people handled the problem and conducted themselves, there must necessarily follow an increase in respect for England, her institutions, and her people. It perhaps is not well appreciated outside of England that she has just passed one of the great crises in her history, and through it all has retained the well-earned reputation of her people for farsightedness, courage, self-control, and respect for law.

If Americans could imagine what our situation would be with all our railroads shut down absolutely, both passenger and freight service, for almost two weeks; also our coal mines; our newspapers discontinued; our local street-car and bus services discontinued or interrupted; the operation of many of our local industries stopped by strikes, with the consequent possibilities of disorder and the certainty of economic maladjustment; and if it could also be remembered that England is much less self-contained than the United States, and, therefore, much more dependent upon her transportation facilities, it might be possible to begin to get the picture of the general strike.

A Serious Situation—But It May Quickly Change

No shipping from any plant for two weeks—so that even if manufacturers had raw materials, and if their men would work, it only meant that the shops became congested with finished goods. No transportation for almost two weeks—so that when the railroad workers returned to work it was necessary, first, to clear the accumulation of that period before normal traffic could be resumed. Fortunately for the world, it is all over now except the coal strike, and this continues to contribute to the loss which British industry is sustaining as a result of unsettled labor conditions.

There is increasing distress in English industry because of the shortage of coal, particularly in the metal-working group; but it also seems evident that, if England can arrange a satisfactory adjustment of this coal situation, we are shortly going to see a greater England than we have ever seen before. If an adjustment of the coal situation cannot be reached, then it will be anybody's guess as to what may happen. The present opinion is that a way will be found to get the men to return to work.

The fact is, England has been running around in circles on the coal business, probably trying to shut her eyes to the facts. There would appear to be many people involved in the coal industry in England who still have faith in the process of passing over the fence with the aid of the boot straps. Because of post-war conditions on the Continent, and the gradual change of vessels from coal to oil burners, plus a certain change also in the means of developing power for industrial plants, the use of Diesel engines, etc., England's coal market has been lessened.

Complexities of the Coal Problem

At the same time, the cost of producing coal has been tremendously increased because of conditions established by the miners' unions; the over-manning of her mines as a result of the return of soldier miners and the retention of men who entered the mines during the war, etc. Without establishing responsibility for such action, it is evident that, to escape strikes, effort has been made to meet the union demands. Production costs have thereby been increased. England has lost coal markets because of high prices, and tried to regain them by processes which included the reinforcement of a government subsidy, until the English people generally have objected to being taxed to sustain the subsidy.

Now the Government has refused to proceed with the subsidy; the miners have refused to reduce their numbers, wages, hours, or to change their homes or calling; the owners apparently have taken the position that they have been making no dividends anyhow, and have nothing more to lose. Somebody must give way, and there would seem to be little in prospect but the consolidation of mining properties to lessen the volume and secure the benefit of low-cost production; a cutting down in force; and either a reduction of wages, or a longer day at the same wage. This might start things on a sound basis. It has not happened yet, but there appears to be confidence in the country that a sound solution will be reached. In any case, it now seems evident that the English people generally are no longer willing to close their eyes to the facts, or blink the difficulties of the situation. An early major operation seems likely.

Machinists' Wages to Advance

The employees in the engineering trades are demanding an increase of a pound a week, and it seems altogether probable that some advance will be granted them. Assuming now that the coal situation is cleared up, and at the same time that an advance is granted to the machinists, it is evident that there will have opened a new chapter in English metal industries. That is the special subject of interest to America. The industries of England for several years have lived under the threat of a general strike; now it is over, and every one at least knows the worst. This fact alone will contribute to optimism, and to the disposition of investors and business men to go forward.

It is a distressing fact, and one with which the United States should have sympathy, that in the face

*President Warner & Swasey Co., Cleveland.

of the fine effort which England has made to meet the financial strain of the war, and just as her economic position had been improved by years of readjustment and hard work, she should now encounter this additional blow and have to sustain the added financial stress caused by weeks of suspended shipments, both internal and export. In the face of all this, it was a surprise to find that the general feeling among the managers of industry was that the strike had improved the general situation by bringing both sides to a realization of the need for some workable readjustment. One thing would seem perfectly clear: England must get rid of the limit of production rule now enforced by the unions, or little progress can be made. That rule, although established by the unions on the theory that it is an aid to working people, is having a deadening effect on both capital and labor, and will prove a strangle-hold unless it is relinquished or broken.

Financial Outlook Not Promising

The view of business men generally, as to the immediate financial effect of the strike, is dubious. Many concerns that have struggled through several bad years are now faced with additional losses, and to some this will be fatal. A considerable increase in the number of bankruptcies may, therefore, be anticipated.

However, although the immediate outlook is not good, taking a longer look ahead discloses a good deal that is hopeful. For example: During the past three years, although England has lost heavily of her foreign trade in Europe and to South America through American competition, she has steadily increased her trade with other parts of her own empire. It is reported that, during the first quarter of 1926, the empire's share of total British exports rose to 45.8 per cent. The empire buys but little coal or raw material from Great Britain; it is, therefore, evident that it provides a market for at least half of all the manufactured goods which Great Britain sells beyond seas. An increase in this trade can safely be anticipated, and it is evident that England is directing intelligent efforts to assure this. In October, the prime ministers of the empire will meet in London, at which time empire trade will be one of the important subjects for discussion.

Internal Trade Increasing

The period of economic readjustment through which England has been passing since the World War no doubt resembles her economic experience at the close of the Napoleonic era. She emerged from the stress of the Napoleonic wars and their economic and political reaction into one of the most prosperous periods of her

history. It is altogether probable she will repeat that experience.

The buying power of the masses of her people is being expanded through increased wages in almost every line of industry. Her moneyed classes, and especially her great land owners, are suffering, but the mass of the people are advancing. Her trade within her own borders, therefore, will reach higher figures.

Possibilities of American Trade

An expansion of British internal trade should mean increased opportunity for the American manufacturer. However, to realize the most on this opportunity, we must anticipate some British competition in our own markets. In the future, trade with Great Britain will mean more and more goods passing both ways, and not merely the selling of American goods in England and the British empire.

There are many factors favorable to the extension of American trade, and, on the other hand, there seem now to be a number of unfavorable factors. The individual American is heartily welcomed and well treated as always. At the same time, English feeling toward the United States is not so friendly as it used to be. One can only guess at the causes for this. Some of them may be that we have grown rich; they owe us money; we are more powerful, or at any rate they think we are. We have not denounced French policy so harshly as the English have; we proposed the League of Nations and then stayed out of it. We are acquiring a large share of Canadian trade; we maintain a tariff wall against English trade and then want to send our goods into England free. On top of this, there is a real movement to encourage the buying of British-made goods. British railroads and also any industry receiving Government subsidy, such as the shipping companies, arms manufacturers, etc., must confine their buying to English goods when obtainable.

A few years ago, any advance of American industry over British industry was likely to be explained in England by a reference to the great natural resources within the United States. Today, this is changed. English industrialists are at last aware that American methods, and the aptitude with which Americans change their methods when opportunities to improve appear, are the greatest factor in the position of leadership now unquestionably occupied by industrial America. We may be confident that this realization will produce its normal reaction in England, and that the next ten years will see vast changes in industrial England. We are not such poor salesmen as to be blind to the opportunities which this will present to American manufacturers.

WITH the increased buying power of the mass of her people, Great Britain's internal trade, the article shows, will be larger than ever, and this expansion should mean increased opportunities for American manufacturers. British industrialists now realize that American methods are largely responsible for this country's position of industrial leadership. And finally, "We are not such poor salesmen as to be blind to the opportunities which this will present to American manufacturers."

Colonel Scott landed in England just as the general strike was blocking manufacture, transportation and trade throughout the British Isles. In the month following he studied its immediate effects and its probable ultimate effects upon British industry. In giving to IRON AGE readers the impressions which are uppermost in his mind as the result of his conversations with many leaders in business and of all the information he gathered from a wide range of investigation, he writes with a friendly appreciation of Great Britain's problem even more hopefully than the average British commentator.

With a satisfactory adjustment of the coal situation, Colonel Scott believes "we are shortly going to see a greater England than we have ever seen before." Against the fearful cost of the strike he sets the fact that both sides now realize the need for some workable readjustment. From this he argues that "an early major operation seems likely."

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A Remarkable Half-Year in Steel

JANUARY forecasts of the steel trade in 1926 commonly agreed in taking a favorable view of the first six months. There was like agreement in refraining from prophecy as to the second half, with no concealment of the fact that such reticence was due to the belief that some forces were at work which might bring the beginnings of trade reaction before the year was half run. Building, it was conceded, could not be expected to hold up to the high rate of 1925. Railroad track replacement had been contracted for on an unusual scale for the new year, but it was questioned if, in view of the high state of equipment efficiency, the buying of cars and locomotives would even be up to the modest scale of the year just ended. There was some question, moreover, as to the course of automobile building in the second half of 1926, though leaders in that industry predicted a continuance of the high rate of activity that in 1925 had made a new record.

In the general business situation the factors which received most attention in the forecasts for 1926 were the speculative excesses in Wall Street, the widespread speculation in real estate, the overbuying of consumers' goods on credit, and the unbalanced state of industry as seen in the marked prosperity of town labor and the continued poor return to the farmer.

Looking back on the course of business in the six months just ended, it must be said that none of the untoward conditions, concerning which warnings were sounded as the year opened, has unfavorably affected the steel industry to the extent commonly expected. As has been indicated in these columns from time to time, the conservative conduct of all business, including steel manufacture, has saved it from the serious disturbance that in other times has resulted from such a sharp reaction in stock market values as Wall Street saw in February and March. Also the wild speculation in Florida real estate was halted without appreciable effect on general business. The dangers of installment buying are still discussed, but have not developed into any larger menace to the country's

prosperity, their widespread recognition being a possible factor of safety. The leanness of agriculture remains uncured, but the prospect of at least a partial solution of the problem is admittedly improved.

The vitality of steel demand in the face of some developments in the past six months that might have been expected to work for reaction is seen in the record production attained by the industry. While there were January prophecies of a maintenance through the first half of 1926 of the high rate of activity that marked last year, even the most optimistic forecasts fell short of the actual performance. With an estimate for June, based on an operation slightly under 80 per cent, the steel ingot total for the six months just ended is roundly 24¼ million tons, or nearly 1,000,000 tons in excess of the best previous record for the like period, which was made in 1923. The comparison for the half-year periods in 1923, 1924, 1925 and 1926 is as follows:

Steel Ingot Production—Gross Tons

First half of 1923.....	23,326,965
First half of 1924.....	19,737,034
First half of 1925.....	22,383,071
First half of 1926, estimated.....	24,250,000

In spite of this unexpectedly good performance in the first half, there is little disposition to venture upon prophecy for the remainder of the year. In this respect steel trade opinion is like current opinion regarding business in general. The political outlook has thickened somewhat of late. Moreover, the habit of looking to the crops to show the way has not been outgrown. And while post-war inflation may have obscured its effect thus far, the large proportion of the national income devoted to luxury is a factor that in time will bring a reckoning.

Narrowing the view to the steel trade itself, the fact that July opens with the prospect of mill operations in the next 60 days at a rate substantially above the July-August average of the past three years is highly significant. Barring an untoward development affecting all business, what was considered highly improbable at the beginning of the year is no longer so regarded, and that is a total

steel output in excess of the remarkable showing for 1925 and establishing a new record for a calendar year.

Comparisons of Business Volume

BY the average business man trade conditions are studied chiefly to determine his own opportunities of success. There is in everyone's mind, prominent or lurking, the impression that there is some general index to the state of business that if determined would throw much light upon the individual's case.

Yet even a cursory glance shows that the indexes of business trends show departures. Either the indexes must be weighted, to strike an average, or the individual must select those most likely to reflect, or conform with, his own condition.

In the simple case of comparing the first four months of this year with the first four months of last year to discover whether this year promises to be better or poorer than last, we find that there are divergences. Taking three statistical items which are carefully ascertained and are individually very important, an impressive variance is found.

The Federal Reserve Board publishes monthly an index of "production in basic industries," which is a physical measure, in terms of quantities. This shows a decrease of 1.0 per cent in the first four months of this year from the first four months of last. The Bureau of Labor compiles a monthly index number of all commodity prices at wholesale. This shows for the periods selected a decline of 3.6 per cent. If the two measures were of the same things, in quantity and price respectively, the combination of decreases of 1.0 per cent and 3.6 per cent respectively would make a decrease of 4.6 per cent in the money turnover. Another index, however, the Federal Reserve Board's compilation of bank debits outside New York, shows an increase of 8.6 per cent. The 4.6 per cent decrease and 8.6 per cent increase represent a divergence of 12 or 13 per cent.

The divergence is not a discrepancy or fault. It is a failure of indexes apparently quite comprehensive to make a general showing, or a showing applicable to the problems of the different classes of business, with their varying individual circumstances. The indexes do not refer to precisely the same things.

Considering freight car loadings, we find an increase of 1.8 per cent, which falls between the 1.0 per cent decrease in physical production in basic industries and the 8.6 per cent increase in bank debits, or check payments of all sorts outside New York. This makes the sequence one would probably expect, for car loadings are more comprehensive than production in the basic industries selected, and money payments are more comprehensive still.

With prices decreased more than the physical volume, the P/V factor of the economists (price divided by volume) decreases, and this the economists usually consider an unfavorable trend. There is, however, room for some discussion of that subject. Circumstances ought to be considered. Surely, if volume is unnaturally low and prices are unnaturally high, it is a good thing for the P/V factor

to decline. Post-war readjustment may well be held to have involved this very thing. There was inflation of prices after the war and gross inefficiency in production. Both needed correction. The question is whether seven and a half years after the war we are reasonably well through with that. Whatever may be the difference between the volume or value of business this year as compared with last year, it is too small to count. The more important matter is whether the changes in detail are making for greater or less soundness in business. It is soundness that makes promise for the future.

To Purify Patent Practice

MANY engaged in the practice of patent law or who are otherwise interested in the soliciting of patents are supporting the Cramton bill now before Congress, which seeks to do away with certain abuses in the patent system of the United States. The Commissioner of Patents is heartily for the bill. Some interests are fighting it. However, it has already passed the House and there are good prospects of favorable action by the Senate.

At present the Commissioner of Patents has full control of the professional activities of those who have been admitted to practice and are in good standing in the Patent Office. They must even submit their advertising matter for his approval before they may publish it. But there is no statutory provision which would prevent a disbarred attorney or a person who has been denied admittance to practice, or anyone else, from setting himself up, as an individual or as a corporation, and soliciting business from inventors in any manner he may deem fit. By advertising and other solicitation glowing promises of riches have been held out to inventors, who have been mulcted of sums of money all out of proportion to services rendered. The system has been fairly reduced to a science. The inventor, full of enthusiasm for his idea and hopeful of rich reward, is shown letters alleged to be from the Patent Office, expressing wonder at the brilliancy of his creation. Another form of letter asks if he would take \$50,000 or some other large amount for his invention. He or his financial backer is led on to pay fees up to the limit. The Patent Office has been helpless against this abuse.

The proposed law would stop it. The bill has sharp teeth, in a fine up to \$5,000, or imprisonment up to two years, or both. It is made unlawful for any person who has not conformed with the rules and regulations of the Commissioner of Patents governing the recognition of agents, attorneys or other persons representing applicants in the Patent Office, and who has not been so recognized, or who has been disbarred from practice before the Patent Office, to hold himself to be a patent agent, attorney or counselor with respect to patent applications. Nor may such person convey the impression that he either alone or in association maintains an office of any kind in preparing, prosecuting or advising with respect to application for patents. No corporation would be admitted to practice, and violation of this provision would mean fine for the corporation and fine or imprisonment or both for its personnel.

The Patent Office functions as a court. Its purpose is to administer justice in respect to the

patentability of inventions. It is given the power to reject the applicant for admission to practice, and to disbar from practice. The Cramton bill provides the same powers for the Commissioner of Patents as are accorded to a judge. A lawyer may not practice until he is admitted to the bar. If he is debarred he must desist from practice, else the stern hand of the court will descend upon him. The proposed act would apply similar safeguards to the practice of patent law.

Gaging Steel Scrap Supply

WITH the much steadier conditions obtaining of late in the steel trade, various appraisals can be made that were formerly difficult or impossible. When mill operations fluctuated widely from year to year one could not gage, on the one hand, the influence of stocks of steel standing between production and consumption, and on the other hand the influence of stocks of raw materials, particularly steel scrap. There are no direct statistics of scrap supply, and if scrap quietly gets scarce more pig iron will be needed in making basic open-hearth steel—a situation interesting at once to ore, merchant pig iron and coke producers.

As shown in these columns last week, the percentage of rolled steel produced to ingots produced in the past four years has varied but little from 74 per cent.

In the old days scrap accumulated in dull times and was used in good times. When there was an unusually long period of good times the market price of scrap advanced. In the past three and a half years we have had much heavier steel production than in the preceding two years, but scrap has really declined. It was highest in 1923, and in the past six months it has averaged \$1 to \$2 a ton lower than in 1925.

There is no case of continued heavy production of steel exhausting supplies of scrap. Apparently things can go on indefinitely as they have been going without any derangement.

On the assumption of one-fourth of the ingot tonnage, last year's supply of steel mill scrap was 11,000,000 tons. Twenty years ago Bessemer steel production was at its maximum, supplying much scrap for open-hearth use. Last year open-hearth ingots were 5.6 times Bessemer ingots, and accordingly the relationship cannot change much more. Acid open-hearth ingots were only 484,843 tons last year, and may be left out of the reckoning.

Basic open-hearth ingots in 1925 amounted to 36,632,060 tons, while basic pig iron was 19,667,380 tons. The difference is 17,000,000 tons. Loss of carbon, etc., would mean another million tons, but ore additions would largely offset this.

While the conclusion is only rough, we may say that, with 17,000,000 tons of steel scrap needed and about 11,000,000 tons supplied by the works themselves, about 6,000,000 tons of outside scrap was required, made up of industrial or new scrap and old material.

Last year there was produced 33,386,960 gross tons of rolled iron and steel. No little scrap was produced in the working up or fabricating of this material, for ultimate employment, and much of the steel consumption represented some sort of replacement. Bridges and buildings are torn down

to make way for others, machinery is thrown out for better equipment, and the railroads discard something like one and a half million tons of rails a year and somewhere between 100,000 and 200,000 freight cars.

Thus there is a very large scrap supply relative to the apparent needs of the steel mills, which do not take all, since the iron foundries, the steel foundries and the iron mills all come in for a share. Things can run along quite smoothly, but the whole arrangement would be broken should a sound ingot be developed.

PITTSBURGH iron market reports in the daily press have been referring with much uniformity for a good many weeks to quietness in pig iron in Pittsburgh and Valley territory. At the same time these reports allude to the activity in other pig iron markets in a way suggesting that temporarily the Pittsburgh district is out of step with these districts in respect to pig iron. The fact is that the Pittsburgh district pig iron market has been relatively quiet for many months and is destined to be so for a good many months to come. Time was when the steel companies in the Pittsburgh and Valley districts would take on large blocks of Bessemer iron, when a rising tide in the steel market made a greater demand for pig iron than their own blast furnaces could supply. As the Bessemer converter gave way to the open-hearth furnace, these occasional purchases of the large steel companies were of basic pig iron. But the day came when these important steel producers made themselves practically independent of the merchant pig iron market by providing blast furnace capacity adequate to the full operation of their steel plants, with due allowance for increases in the scrap percentage, should occasion require. Meanwhile there has been a great expansion in merchant pig iron capacity on the Lakes—at Buffalo, Cleveland, Detroit and Chicago—and these other districts have become more influential in the determination of pig iron values in the Central West as the percentage of the Pittsburgh district transactions has been falling away from its old-time proportions.

Milwaukee Engineering Executives Complete Non-Resident Post-Graduate Course

Seven Milwaukee engineers are members of the first class of non-resident post-graduate students of the University of Wisconsin, Madison, to receive the degree of master of science in metallurgy at the annual commencement exercises, June 21-25. The group was organized two and a half years ago under the direction of Prof. R. S. McCaffrey, of the College of Engineering at Madison. The seven engineers, graduates of various colleges and holding executive positions in Milwaukee industries, pursued the post-graduate work in their own plants, a seminar being held every Friday evening from 7:30 until midnight, and each Saturday being devoted to conferences on the various research projects.

Those who received the degree are: Arthur T. Baumer, works manager Milwaukee Steel Foundry Co.; William J. MacNeil, general superintendent, and Delos I. Dobson, metallurgist, Federal Malleable Co.; John E. Bock, metallurgist, Vilter Mfg. Co.; Charles McLewis, vice-president Badger Malleable & Mfg. Co., South Milwaukee; Scott Mackay, works manager Globe Electric Co.

Decline in June Iron Production

Estimated Returns Show Daily Rate 4479 Tons or 4 Per Cent Less Than May—Net Loss of 7 Furnaces

ACCORDING to data gathered by wire on June 29, the pig iron production for June registered a moderate decline from that of May. With the last two days of the month estimated in most cases by the producing companies, the output was 3,234,769 gross tons, or 107,825 tons per day for the 30 days in June. This is a decline of about 4 per cent from the 112,304 tons per day made in the 31 days in May.

There were 9 furnaces blown out or banked and 2 blown in, making a net loss of 7 for the month. There are therefore 221 furnaces operating at the end of the month as contrasted with 228 on June 1.

Furnaces Blown In and Out

There were only 2 furnaces blown in during June: No. 4 Monongahela furnace of the National Tube Co. in the Pittsburgh district and the Oriskany furnace of E. J. Lavino & Co. in Virginia. The 9 furnaces which were blown out or banked were as follows: One furnace of the Bethlehem Steel Corporation at its Lackawanna plant in the Buffalo district; one Coatesville furnace of the same corporation in the Schuylkill Valley; one Clairton and one Duquesne furnace of the Carnegie Steel Co. and one Monongahela furnace of the National Tube Co. in the Pittsburgh district; one New Castle furnace of the Carnegie Steel Co. in the Shenango Valley; one Sparrows Point furnace of the Bethlehem Steel Corporation in Maryland; one Otis furnace of the Otis Steel Co. in northern Ohio,

and one Bessemer furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama. It is also reported that one Cambria furnace of the Bethlehem Steel Corporation in western Pennsylvania has just been banked.

Production by Districts

The estimated June production by districts is given in the table. The complete returns giving the actual output for all furnaces for the month of June will be published in THE IRON AGE, July 8.

Pig Iron Production by Districts, Gross Tons

	June (30 days)	May (31 days)	April (30 days)	March (31 days)
New York.....	194,368	229,640	236,730	232,816
New Jersey.....	.....	.....	.....	.....
Lehigh Valley.....	92,040	92,696	94,770	93,037
Schuylkill Valley...	67,889	81,563	80,290	76,771
Lower Susquehanna and Lebanon Val- leys	35,600	36,845	36,755	43,112
Pittsburgh district..	653,774	712,232	725,982	750,190
Shenango Valley....	135,227	139,201	125,384	119,090
Western Penna. ...	127,525	145,095	158,790	169,039
Maryland, Virginia and Kentucky....	84,150	94,691	98,783	84,488
Wheeling district...	117,553	133,792	123,963	125,071
Mahoning Valley...	311,897	341,801	348,174	322,570
Central and North- ern Ohio	323,386	344,553	340,329	322,698
Southern Ohio.....	45,725	49,137	46,050	50,000
Illinois and Indiana	659,752	664,477	640,173	656,524
Mich., Minn., Mo., Wis., Colo. and Utah	141,332	153,072	147,902	140,188
Alabama	236,301	254,245	237,808	244,403
Tennessee	8,250	8,388	8,299	11,989
Total	3,234,769	3,481,428	3,450,122	3,441,986

REINFORCING STEEL

Awards Total Nearly 3500 Tons—Bridge at New Orleans Will Take 9500 Tons

The outstanding item in concrete reinforcing bars is a bridge over Lake Pontchartrain near New Orleans, which will require 9500 tons. This brings the total amount for the week on which bids are being taken to 14,000 tons. A manufacturing plant at Decatur, Ill., will take 1000 tons. The week's awards were about 3500 tons, the largest being 1000 tons for a hospital at Iowa City, Iowa. Awards follow:

STAMFORD, CONN., 100 tons, Conde Nast Co., building, to Truscon Steel Co.
LONG ISLAND CITY, 78 tons, Steinway & Sons, building, to Igoe Brothers.
TENNESSEE, 200 tons, State highway bridges, to Concrete Engineering Co.
CHICAGO, 100 tons, Chicago & Western Indiana bridge at Ninety-fourth Street and Cottage Grove Avenue, to Concrete Engineering Co.
CHICAGO, 100 tons, warehouse for the White Paving Co., to Concrete Engineering Co.
CHICAGO, 167 tons, Samuel Gompers Public School, to Joseph T. Ryerson & Son.
CHICAGO, 167 tons, Louis Pasteur Public School, to Joseph T. Ryerson & Son.
CHICAGO, 167 tons, Lovett Public School, to Joseph T. Ryerson & Son.
CHICAGO, 350 tons of rail steel, factory for the Appleton Electric Co., to Calumet Steel Co.
COOK COUNTY, ILL., 100 tons of rail steel, county highway, to the Calumet Steel Co.
PEORIA, ILL., 100 tons, Blaine summer school, to Concrete Engineering Co.
MILWAUKEE, 200 tons, University school, to Concrete Steel Co.
IOWA CITY, IOWA, 1000 tons, hospital for the University of Iowa, to American System of Reinforcing.

SAN FRANCISCO, 800 tons, Russ Building, to unnamed local jobber.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

PROVIDENCE, R. I., 1000 tons, reservoir, City of Providence.
MALDEN, MASS., 200 tons, power house, Malden Electric Co.
BROOKLINE, MASS., 100 tons, town grandstand and field house.
FORDHAM, NEW YORK, 120 tons, New York Central Railroad, bridge.
NEW YORK, 500 tons, Wolf Building; general contract to Industrial Engineering Co.
BROOKLYN, 1800 tons, subway construction work; general contract to Corson Construction Co.
NEW ORLEANS, 9500 tons, bridge over Lake Pontchartrain; bids not in.
DECATUR, ILL., 1000 tons, A. E. Staley Mfg. Co., plant addition.
CHICAGO, 550 tons, McCormick Building, Ontario and Rush Streets; A. Lindstrum, general contractor.
CHICAGO, 300 tons, factory for Appleton Electric Co.; A. Lindstrum, general contractor.
CHICAGO, 500 tons, factory building for Olsen Rug Co.; F. E. Davidson, architect.
AMERICAN FALLS, IDAHO, 166 tons, bridge over American Falls dam; bids opened June 28 at the office of the United States Bureau of Reclamation at American Falls.
SACRAMENTO, CAL., 133 tons, grade crossing under the Southern Pacific and South San Francisco Belt Line tracks near San Mateo; bids to be opened July 9 by the California Highway Commission at Sacramento.

The National Cast Iron Pipe Co., Tarrant City, Ala., a suburb of Birmingham, is considering plans for making its own pig iron, coke and gas. It is reported that negotiations were undertaken with the Sloss-Sheffield Steel & Iron Co. for the acquisition of the Gadsden blast furnaces.

Iron and Steel Markets

New Half-Year Record in Steel

July-August Operations Heavier Than in Recent Years—
Pig Iron Output But 4 Per Cent Less in June
—Buying Totals 800,000 to 900,000 Tons

A NEW record in steel production was made in the half-year just ended. With June estimated, the total is close to 24¼ million tons, or nearly 1,000,000 tons in excess of the best previous record in a like period, which was made in 1923.

July opens with the prospect of mill operations in the next 60 days at a rate substantially above the July-August average of the past three years. That 1926 may exceed the remarkable steel output of 1925 is now no longer considered highly improbable, though commonly so regarded at the beginning of the present year.

Exceptionally gradual is the present decline in the production of both steel and pig iron. The estimated ingot rate for June is close to 80 per cent, against 84 per cent in May, 88 per cent in April and 92.5 per cent in March.

Producers' figures for pig iron output in June, with the last three days of the month estimated, indicate a total of 3,234,769 tons, or 107,825 tons a day, against 3,481,428 tons in May, or 112,304 tons a day—a decrease of 4 per cent.

Nine furnaces were blown out and two were blown in last month—a net loss of 7—leaving 221 furnaces in operation at the end of June. A few are scheduled to go out in the near future, but the suspensions are fewer than was generally expected a month ago.

A number of steel companies found new bookings running higher through June than in May. Nearly all, especially those producing bars, had heavier specifications in June. Apparently the recent stiffening in prices of the heavier products has tended to swell both specifications and new buying.

It is not clear how far larger requirements of steel and how far the price situation have figured in the recent improvement, since reports from consuming industries are somewhat conflicting.

The stronger tone of the market is seen in the prices quoted the Pennsylvania Railroad on Monday on 30,000 tons of steel for third quarter. Bids of 2c., mill, on bars and shapes were received from Eastern and Pittsburgh mills and 2.10c. from Chicago mills; on plates Pittsburgh and Eastern mills quoted 1.90c., mill, and Chicago mills quoted 2.10c. There were slight variations on sheets, ranging from 3.05c. upward on black, 2.30c. upward on blue annealed and 4.25c. upward on galvanized. The low bid on axles was 2.50c. per lb., Pittsburgh. With one or two exceptions all quotations were on a mill basis.

The June buying movement in pig iron reached large proportions, but some of the price cuts were serious, particularly in Ohio and in New England. Chicago reports 250,000 tons sold in the past three weeks, and the past week's total for northern Ohio was 200,000 tons. For the country the month's total was probably 800,000 to 900,000 tons.

An Eastern steel interest that has been drawing on its western Pennsylvania furnaces for its pig iron has a 10,000-ton basic inquiry before Eastern furnaces.

Structural steel awards of the week totaled 32,000 tons, and new inquiries 22,000 tons. A power plant in New York takes 6800 tons and New York subway work 3000 tons. A Chicago office building, now being bid on, calls for 3000 tons.

The Great Northern has bought 20,000 tons of rails and 3000 tons of track supplies. Though railroads are pressing for deliveries against contracts for track material, a buying movement for 1927 rails is not likely before fall.

Prospects for lake shipbuilding have been brightened by new inquiries for three freight boats, which will take 15,000 tons of plates. This brings the total pending to ten—seven freighters and three car ferries.

A Pittsburgh district consumer has bought 6000 tons of billets from a Cleveland mill at \$35, Pittsburgh, the seller absorbing freight to meet the price of Pittsburgh mills. Some further buying of sheet bars at \$36, Cleveland, is reported, this representing a concession from Youngstown basing.

In the farm machinery field tractor and thresher plants are just now the freest buyers of steel. Producers of tillage tools are more cautious, awaiting fuller information concerning crops.

A bridge near New Orleans will require 9500 tons of reinforcing steel.

Reports of export sales of American tin plate repeatedly cabled from Europe are not borne out by entries in exporters' order books.

A marked concession to Germany is the Treasury Department decision for a German-American commission to investigate Germany's bonuses on export steel. Suspension of American countervailing duties may thus extend over many weeks.

Bookings of steel tank and other fabricated plate work in May were the highest for any month in 2½ years except for December, 1924, and the five months' sales this year, 172,170 tons, compare with 120,485 tons for the same period of 1925.

Other five months' figures bear on the showing so far of 1926. Sales of foundry equipment amounted to \$2,230,209, or 23 per cent more than in the first five months of 1925. Steel furniture sales were over \$11,783,000, or 17 per cent above those for five months last year.

Reaching a new low point for the year, THE IRON AGE pig iron composite price stands at \$19.71, in place of the \$19.79 of the three preceding weeks.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	June 29, 1926	June 22, 1926	June 1, 1926	June 30, 1925
No. 2X, Philadelphia...	\$21.76	\$22.76	\$22.76	\$21.26
No. 2, Valley Furnace...	17.75	18.00	18.00	18.50
No. 2, Southern, Cin'tit...	24.19	24.19	25.69	22.55
No. 2, Birmingham...	21.00	21.00	22.00	19.00
No. 2 foundry, Chicago...	21.00	21.00	21.50	20.50
Basic, del'd, eastern Pa...	21.25	21.25	21.75	21.50
Basic, Valley furnace...	18.00	18.00	18.00	18.00
Valley Bessemer del. P'gh	20.76	20.76	20.76	20.76
Malleable, Chicago...	21.00	21.00	21.50	20.50
Malleable, Valley...	17.75	18.00	18.50	18.50
Gray forge, Pittsburgh...	19.01	19.26	19.26	19.76
L. S. charcoal, Chicago...	29.04	29.04	29.04	29.04
Ferromanganese, furnace...	88.00	88.00	88.00	115.00

Rails, Billets, Etc., Per Gross Ton:	June 29, 1926	June 22, 1926	June 1, 1926	June 30, 1925
O-h. rails, heavy, at mill...	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill...	34.00	34.00	34.00	39.20
Bess. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O-h. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O-h. sheet bars, P'gh...	36.00	36.00	36.00	35.00
Forging billets, base, P'gh	40.00	40.00	40.00	40.00
O-h. billets, Phila...	40.30	40.30	40.30	40.30
Wire rods, Pittsburgh...	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	1.90	1.90	1.90	1.90

Finished Iron and Steel.

Per Lb. to Large Buyers:	June 29, 1926	June 22, 1926	June 1, 1926	June 30, 1925
Iron bars, Philadelphia...	2.22	2.22	2.22	2.22
Iron bars, Chicago...	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh...	2.00	2.00	2.00	2.00
Steel bars, Chicago...	2.10	2.10	2.10	2.10
Steel bars, New York...	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh...	1.90	1.90	1.85	1.90
Tank plates, Chicago...	2.10	2.10	2.10	2.10
Tank plates, New York...	2.24	2.24	2.24	2.14
Beams, Pittsburgh...	2.00	2.00	1.90	2.00
Beams, Chicago...	2.10	2.10	2.10	2.10
Beams, New York...	2.34	2.24	2.24	2.34
Steel hoops, Pittsburgh...	2.50	2.50	2.50	2.40

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire.	June 29, 1926	June 22, 1926	June 1, 1926	June 30, 1925
Per Lb. to Large Buyers.	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.10	3.10	3.10	3.10
Sheets, black, No. 28, Chi-				
cago dist. mill...	3.25	3.25	3.30	3.20
Sheets, galv., No. 28, P'gh	4.25	4.25	4.30	4.15
Sheets, galv., No. 28, Chi-				
cago dist. mill...	4.40	4.50	4.60	4.25
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.35	2.30
Sheets, blue, 9 & 10, Chi-				
cago dist. mill...	2.40	2.40	2.60	2.35
Wire nails, Pittsburgh...	2.65	2.65	2.65	2.65
Wire nails, Chicago dist.				
mill...	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill...	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.35
Barbed wire, galv., Chi-				
cago dist. mill...	3.40	3.40	3.40	3.50
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

Carwheels, Chicago...	\$16.00	\$15.50	\$15.00	\$17.00
Carwheels, Philadelphia...	17.00	17.00	17.00	17.00
Heavy steel scrap, P'gh...	16.25	16.00	15.00	17.50
Heavy steel scrap, Phila...	15.00	15.00	15.00	15.50
Heavy steel scrap, Ch'go...	13.50	12.50	12.00	15.50
No. 1 cast, Pittsburgh...	15.50	16.00	16.00	17.00
No. 1 cast, Philadelphia...	17.00	17.00	17.00	17.50
No. 1 cast, Ch'go (net ton)	16.75	16.50	15.75	17.50
No. 1 RR. wrot. Phila...	16.50	16.50	17.00	18.50
No. 1 RR. wrot. Ch'go (net)	13.00	12.00	10.50	14.00

Coke, Connellsville, Per Net-Ton at Oven:

Furnace coke, prompt...	\$2.75	\$2.75	\$3.00	\$2.75
Foundry coke, prompt...	4.00	4.00	4.00	3.75

Metals,

Per Lb. to Large Buyers:	June 29, 1926	June 22, 1926	June 1, 1926	June 30, 1925
Lake copper, New York...	14.00	14.00	14.00	13.87½
Electrolytic copper, refinery	13.62½	13.70	13.57½	13.50
Zinc, St. Louis...	7.17½	7.12½	6.95	7.00
Zinc, New York...	7.52½	7.47½	7.30	7.35
Lead, St. Louis...	8.00	8.10	7.45	7.75
Lead, New York...	8.25	8.35	7.65	8.00
Tin (Strait), New York...	61.62½	61.37½	60.62½	57.00
Antimony (Asiatic), N. Y.	13.50	13.00	9.50	16.50

Pittsburgh

Activity in Both Pig Iron and Steel—Operations Maintained

PITTSBURGH, June 29.—The up-swing in steel business which began about the first of June continues, and while the report is not unanimous that business is good, such certainly is the report of the majority. June business in almost all lines exceeds that for May and total bookings of some companies were the best since March. It is not easy to determine whether the improvement is due to larger requirements of steel or the price situation, because reports from consuming industries are somewhat conflicting and there is no doubt that the recent stiffening in prices of the heavy tonnage products has tended to swell both specifications and new buying.

Sentiment in the steel trade has improved greatly and it is commented upon that consumers evidently are satisfied that the chances of immediate changes either way from present prices are slight, since there is much less pressure against them than was the case a few weeks ago.

The increased volume of business has not brought a corresponding change in plant activities, the general averages in finishing mills and steel works being practically unchanged from early June. That is probably a natural condition, seeing that the mid-year period is at hand, with its usual let-down for the observance of July 4 and for plant repairs. It is also a fact that a good deal of recent business calls for July and later

delivery, and with no speeding up now there will be a better sustained operation later.

The Pittsburgh Valley pig iron market finally has caught the stride of other markets, with sales in the past week aggregating fully 30,000 tons, mostly of foundry grade. The gain in business, however, has been partly at the expense of prices, with No. 2 foundry selling down to \$17.75 or 25c. a ton below last week's price. This is the lowest price in at least ten years and is a disappointment to the trade in view of recent efforts to establish the market on a more profitable basis.

The Carnegie Steel Co. has taken off a furnace in Pittsburgh and one in the Shenango Valley in the week and now has 34 out of 51 stacks in production. One of the Johnstown furnaces of Bethlehem Steel Co. has been banked and in this and nearby districts there are now 82 furnaces active out of 127, compared with 86 a month ago.

A furnace of the M. A. Hanna Co. at Leetonia, Ohio, and No. 1 furnace of the Shenango Furnace Co., Sharpsville, Pa., will be blown out in the next week or so, but the furnace of the Clinton Iron & Steel Co., Pittsburgh, will resume production around July 15. The blast furnace suspensions have been much fewer than they were expected to be a month ago, when weakness in the merchant market and a quieter steel market indicated that curtailment would be necessary.

There is a very high rate of operation of pipe mills, which are at least 85 per cent engaged. The next best showing is in tin mills, of which there is an operation of about 80 per cent.

Sheet mill operation is somewhat heavier than it was a month ago, but probably does not exceed 70 per

cent. Bar and structural mills are well engaged with plate and wire mills showing the lowest rate of operation. Ingot production is around 70 per cent for the Pittsburgh-Youngstown-Johnstown-Wheeling area.

There is no strength in the coke market, as supplies still are ample for all requirements. A slightly stronger undertone to the scrap market seems to be due more to the activities of dealers than of consumers.

Pig Iron.—The past week or ten days has been easily the most active period that this market has had for some time. Sales have aggregated about 30,000 tons, mostly of foundry iron and include one lot for last half shipment of 15,000 tons to a railroad equipment foundry in this district. At least three producers, and possibly a fourth, shared in this 15,000-ton sale, and while a small part of the iron brought \$18, Valley furnace, for No. 2, the ruling price in the transaction was \$17.75. This represents a drop of 25c. a ton since a week ago and is the lowest price that has been seen since early 1916. It is a discouraging development to the furnaces in view of the fact that at least two producers recently raised the price 50c. a ton to \$18.50 for the base grade. No sales have been made at higher than \$18 and that seems to be the outside price on the malleable grade, which is included in the 15,000-ton transaction at \$17.75. The market is purely nominal on the steel-making grades, but a test of the basic iron price is immediately ahead in an inquiry from the American Steel Foundries for 3000 to 5000 tons for third-quarter shipment to the Alliance, Ohio, plant of this company. This business will probably be closed in the next few days and it is reported that the company has had a quotation of less than \$18, Valley furnace. There seems to be a somewhat heavier melt of foundry iron in this district, but there is no doubt that the low price at which it is available has had something to do with the larger sales.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$18.00
Bessemer	19.00
Gray forge	\$17.25 to 17.50
No. 2 foundry	17.75 to 18.00
No. 3 foundry	17.25 to 17.50
Malleable	17.75 to 18.00
Low phosphorus, copper free	27.50

Ferroalloys.—Recent prices are holding, with new business light, but with very steady specifying against contracts. No effort is being made to advance the price of ferromanganese, because there is so little business to be secured, and as the cost of the ore is down, present prices are regarded as probably letting producers out without loss. Prices are given on page 37.

Semi-Finished Steel.—Prices of billets, slabs and sheet bars are maintained at the ruling levels for the first and second quarters, or \$35, Pittsburgh or Youngstown, for large billets and slabs and \$36 for sheet bars and small billets and slabs. There was heavy buying for first quarter delivery, but in the second quarter consumers generally adopted a policy of buying from month to month and for the third quarter the more common report is that there is a continuance of the sec-

ond quarter plan of purchase. Specifications against contracts for wire rods are reported to be larger. The first and second quarter price of \$45, base Pittsburgh or Cleveland, is being continued.

Rails and Track Supplies.—The railroads are placing third quarter requirements of track accessories fairly freely, and the market, while not really active, is making a better showing than it did recently. The Carnegie Steel Co. and the Bethlehem Steel Co. divided the order for 50,000 tons of standard rails placed by the Norfolk & Western Railway, which now is in the market for the spikes and tie plates to go along with the rails. Light rails still are moving slowly, but on small lots of billet rails as much as \$35 per gross ton is being obtained, and it takes a fair order to bring out a quotation of \$34. Prices are given on page 35.

Wire Products.—Consumption is growing in nails and wire and as jobbers have been going along with lighter stocks than usual they have found it necessary to make heavier demands upon the mills. Individual orders still are small, but the aggregate of the past week has been fairly large with all local manufacturers and with one it was the largest with one exception since last fall. There has been some effort to get buyers to anticipate requirements to permit mill suspensions for the holiday and for an additional period for repairs, but the real reason for the betterment in business is found in heavier consumption. The belief still prevails that there will be less of a summer lull in business than usual this year because of moderate stocks in second hands. Prices are perfectly steady. They are given on page 35.

Sheets.—Recent betterment in business is maintained and greater steadiness in prices also is apparent. One or two mills still are taking galvanized sheets at 4.25c., base Pittsburgh, but the more common price is 4.30c. On black sheets, box annealed one pass cold rolled, mills in this area insist that 3.10c., base Pittsburgh, is minimum, and that sales at 3c., and even 2.90c., refer to finishes carrying large extras the juggling of which results in a low equivalent black sheet base. Prices higher than 2.30c., base Pittsburgh, for blue annealed sheets have disappeared, but there is no shading of 2.30c. All makers now are at 4.75c., base, for long ternes. At these levels makers are taking a stronger stand and it is helpful to business, since it was price uncertainty rather than a lack of requirements that held up business a few weeks ago. Mill operations of the American Sheet & Tin Plate Co. this week are almost 30 per cent greater than they were a month ago and incoming business of the past week was equal to 90 per cent of its capacity. Independent companies are faring better than recently and with all sheet mill capacity at least 70 per cent engaged, there has been a gain of about 15 per cent in operations as compared with early June. Outside of the maker of a low-priced car, demands of the automobile industry are much stronger than they were 30 days ago. Prices are given on page 35.

Tin Plate.—The packing crops are making progress

THE IRON AGE Composite Prices

Finished Steel

June 29, 1926, 2.431c. Per Lb.

One week ago.....	2.417c.
One month ago.....	2.403c.
One year ago.....	2.424c.
10-year pre-war average.....	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

High		Low	
1926	2.453c., Jan. 5;	2.403c.,	May 18
1925	2.560c., Jan. 6;	2.396c.,	Aug. 18
1924	2.789c., Jan. 15;	2.460c.,	Oct. 14
1923	2.824c., April 24;	2.446c.,	Jan. 2

Pig Iron

June 29, 1926, \$19.71 Per Gross Ton

One week ago.....	\$19.79
One month ago.....	20.04
One year ago.....	19.13
10-year pre-war average.....	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

High		Low	
1926	\$21.54, Jan. 5;	\$19.71,	June 29
1925	22.50, Jan. 13;	18.96,	July 7
1924	22.88, Feb. 26;	19.21,	Nov. 3
1923	30.86, March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel	
	Base Per Lb.
F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c.
Del'd Philadelphia.....	2.32c.
Del'd New York.....	2.34c.
Del'd Cleveland.....	2.19c.
Del'd Birmingham.....	2.15c. to 2.25c.
F.o.b. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
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Rail Steel

F.o.b. mill.....	1.80c. to 1.90c.
F.o.b. Chicago.....	2.00c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	3.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.90c. to 2.00c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.00c. to 2.10c.
Del'd Cleveland.....	2.09c.
Del'd Philadelphia.....	2.22c.
Del'd New York.....	2.24c.
C.I.F. Pacific ports.....	2.25c. to 2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c. to 2.19c.
Del'd Philadelphia.....	2.22c. to 2.32c.
Del'd New York.....	2.24c. to 2.34c.
C.I.F. Pacific ports.....	2.30c. to 2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, 6 in. and narrower, Chicago.....	2.60c.
All gages, wider than 6 in., Chicago.....	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills.....	2.50c.
Bars, f.o.b. Chicago.....	2.50c.
Bars, Cleveland.....	2.55c.
Shafting, ground, f.o.b. mill.....	2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.60c. to 3.75c.
Strips, f.o.b. Cleveland mills.....	3.60c. to 3.75c.
Strips, delivered Chicago.....	4.05c.
Strips, f.o.b. Worcester mills.....	4.05c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails.....	\$2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1 in.....	4.90
Galvanized staples.....	3.35
Polished staples.....	3.10
Cement coated nails.....	2.65

Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire.....	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.35
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh.....	\$65.00
F.o.b. Cleveland.....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth.....	68.00
F.o.b. Birmingham.....	68.00

Sheets

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh.....	2.30c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills.....	2.40c. to 2.45c.
Nos. 9 and 10, del'd Philadelphia.....	2.62c. to 2.72c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh.....	3.10c. to 3.15c.
No. 28, f.o.b. Ch'go dist. mill.....	3.25c. to 3.30c.
No. 28, del'd Philadelphia.....	3.32c. to 3.47c.

Galvanized

No. 28, f.o.b. Pittsburgh.....	4.25c. to 4.30c.
No. 28, f.o.b. Chicago dist. mills.....	4.40c. to 4.45c.
No. 28, del'd Philadelphia.....	4.62c. to 4.72c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.15c.
No. 28, f.o.b. Chicago dist. mill.....	3.25c.

Automobile Body Sheets

No. 22, f.o.b. Pittsburgh.....	4.20c.
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Long Ternes

No. 28, 8-lb. coating, f.o.b. mill.....	4.75c.
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Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood.....	5.60
Ind.....	5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base.....	\$11.40
8-lb. coating I.C. 11.70.....	30-lb. coating I.C. 19.45
15-lb. coating I.C. 14.85.....	40-lb. coating I.C. 21.65
20-lb. coating I.C. 16.20.....	

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers	Base Per 100 Lb.
21.00* (1/4% Nickel, 0.10% to 0.20% Carbon).....	\$3.20 to \$3.25
23.00 (3 1/4% Nickel).....	4.40 to 4.50
2500 (5% Nickel).....	5.50 to 5.65
3100 (Nickel Chromium).....	3.40 to 3.50
3200 (Nickel Chromium).....	5.00 to 5.25
3300 (Nickel Chromium).....	7.00 to 7.25
3400 (Nickel Chromium).....	6.25 to 6.50
5100 (Chromium Steel).....	3.40 to 3.50
5200* (Chromium Steel).....	7.00 to 7.50
6100 (Chrom. Vanadium bars).....	4.30
6100 (Chrom. Vanad. spring steel).....	3.80
9250 (Silicon Manganese spring steel).....	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.).....	4.30
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.).....	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.).....	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum).....	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	\$34.00 to 35.00
Light (from rail steel), f.o.b. mill.....	32.00 to 33.00
Light (from billets), f.o.b. Ch'go mill.....	\$36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, 3/4 in. and larger.....	\$2.80 to \$3.00
Spikes, 1/2 in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	3.90 to 4.50
Tie plates, steel.....	2.25 to 2.35
Angle bars.....	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel	Iron
Inches	Inches
Black Galv.	Black Galv.
1/4..... 45	1/4 to 3/8... +11 +39
1/2..... 51	1/2..... 22 2
3/4..... 56	3/4..... 28 11
1..... 60	1 to 1 1/2... 30 12
1 1/2..... 62	

Lap Weld

2..... 55	43 1/2	2..... 23 7
2 1/2 to 6..... 59	47 1/2	2 1/2..... 26 11
7 and 8..... 66	49 1/2	3 to 6..... 28 13
9 and 10..... 64	41 1/2	7 to 12..... 26 11
11 and 12..... 63	40 1/2	

Butt Weld, extra strong, plain ends

1/4..... 41	24 1/2	1/4 to 3/8... +19 +54
1/2 to 3/4..... 47	30 1/2	1/2..... 21 7
3/4..... 53	42 1/2	3/4..... 28 12
1..... 58	47 1/2	1 to 1 1/2... 30 14
1 to 1 1/2..... 60	49 1/2	
2 to 3..... 61	50 1/2	

Lap Weld, extra strong, plain ends

2..... 53	42 1/2	2..... 23 9
2 1/2 to 4..... 57	46 1/2	2 1/2 to 4..... 29 15
4 1/2 to 6..... 56	45 1/2	4 1/2 to 6..... 28 14
7 to 8..... 52	39 1/2	7 to 8..... 21 7
9 and 10..... 45	32 1/2	9 to 12..... 16 2
11 and 12..... 44	31 1/2	

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1 1/2 points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel	Charcoal Iron
2 to 2 1/4 in..... 27	1 1/4 in..... +18
2 1/4 to 2 3/4 in..... 37	1 3/4 to 1 3/8 in..... + 8
3 in..... 40	2 to 2 1/4 in..... — 2
3 1/4 to 3 3/4 in..... 42 1/2	2 1/4 to 3 in..... — 7
4 to 13 in..... 46	3 1/4 to 4 1/2 in..... — 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in..... 60	3 in..... 45
1 1/4 to 1 1/2 in..... 52	3 1/4 to 3 3/4 in..... 47
1 3/4 in..... 36	4 in..... 50
2 to 2 1/4 in..... 31	4 1/2, 5 and 6 in. 45
2 1/4 to 2 3/4 in..... 39	

Hot Rolled

2 and 2 1/4 in..... 34	3 1/4 and 3 3/4 in..... 50
2 3/4 and 2 1/2 in..... 42	4 in..... 53
3 in..... 48	4 1/2, 5 and 6 in. 48

Less carloads, 4 points less. Add \$5 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base.....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 15 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.	

in spite of unseasonably cool weather and tin plate manufacturers who figured that a slowing down of mill operations would be necessary have been agreeably surprised by getting full specifications against August quotas of packers' can sizes. The recent rate of mill operations is sustained, and with a lively export demand on account of the effect of the British coal miners' strike it now seems likely that a recession in production is some time off. Mills in this district have sufficient business to maintain operations at 80 per cent or more through August. More export business could be taken by some mills if they could meet the delivery requirements.

Cold Finished Steel Bars and Shafting.—Orders are not increasing much in size, but they are in number and in volume, while the recent stiffening in hot-rolled bars is a helpful factor in the maintenance of prices on cold-finished bars. Automobile builders generally are taking hold more freely, although not departing from a hand-to-mouth buying policy. The ordinary tonnage price still is 2.50c., base Pittsburgh.

Hot Rolled Flats.—June made a better showing in point of bookings than May, and while the gain was moderate and there has been no evidence of a departure by buyers from a policy of covering their requirements as they arise, makers derive satisfaction from the fact that there was an upturn in a month which usually shows a downward slant in the business chart. Prices are steady at 2.30c., base Pittsburgh, on material 6 in. and wider and 2.50c., base, for narrower stock.

Cold Rolled Strips.—There is still much competition for the more desirable accounts and makers who have long served individual consumers find they have to fight to hold them. Some low prices have developed in these struggles, but the ruling prices are 3.60c., base Pittsburgh, on the large lots and 3.75c., base, for the small tonnages. Individual orders still reflect a desire on the part of consumers to avoid building up stocks, but total bookings of mills in this district ran somewhat above those for May.

Steel and Iron Bars.—The steel bar market still feels the impetus of the stronger price stand of producers and both orders and specifications are coming in at a very satisfactory gait. Not much tonnage that is leaving the mills yet is carrying a price of 2c. base, Pittsburgh, but on new business producers are firm at that figure and for small lots want 2.10c., base. Iron bars are rather slow and on desirable orders it is believed the quotation would be shaded. Prices are given on page 35.

Structural Steel.—The higher price recently established for large structural shapes is effective so far as new business is concerned, but evidence is lacking that any considerable tonnage, except to small lot buyers, is carrying that price. The territory tributary to Pittsburgh is not producing very much fabricated steel business.

Plates.—All mills in this district now are firm at 1.90c. base, Pittsburgh, although the market is not very active. River barge business is good and a good deal of business is created for the plate mills by the fact that the pipe market is active in the larger sizes.

Tubular Goods.—Pipe continues to stand out as the most active of the finished products. Demand for oil country pipe is strong, and with all mills having good backlogs, there is more and more shopping by jobbers for supplies from other than their regular sources, in the hope of getting desired delivery. Demand for merchant pipe is steady and in good volume. Line pipe business lately has not amounted to much but prospective business is good and includes a 475 mile line from the Amarillo, Tex., field to Kansas City. The Hope Engineering & Supply Co., Mt. Vernon, Ohio, is working out the details of this line, which will carry gas and calls for 20-in. pipe. The tonnage is figured at between 60,000 and 70,000 tons. Boiler tube business is steady enough, but competition for orders still is keen and prices too low to be satisfactory to producers. Discounts are given on page 35.

Bolts, Nuts and Rivets.—There is a fair demand for bolts and nuts at the same prices that now have ruled for 18 months. Books were opened a short time ago for third-quarter contracts and a fair amount of such business has been placed, but as is true in most other lines, quarterly contracts no longer are as common as they were a few years ago, this because of ample capacity and the ability of producers to ship at short notice. The common quotation on large rivets is \$2.60 base, per 100 lb., but subject to shading, particularly on what are regarded as attractive orders. Prices and discounts are given on page 37.

Coke and Coal.—Spot furnace coke prices have eased off further since a week ago, although in a general way \$2.75 per net ton at ovens still is the more common price. Sales, however, have been made at above and below that figure, but it is noted that producers no longer claim ability to get as much as \$3 even on what are regarded as high grade brands. There has been no change in foundry coke and the coal market does not seem to have been helped so far as prices are concerned by the substantial purchases that have been made for stocking by some of the steel companies and railroads. Prices are given on page 37.

Old Material.—Three Pittsburgh district steel makers have been buyers of heavy melting steel in the past week; one bought at \$16.25 and the others at \$16.50. There is a report that one mill paid \$17, but this seems to be based on a bid of \$16.75 by a dealer trying to get material rolling toward an Ohio River point. The market still lacks real activity, but it has a rather strong undertone on the steel works grades, due in part to the fact that dealers who sold at lower levels are nervous because offerings are light and are paying as much as the consumers to avoid too much of a loss. Heavy melting steel is quotable at \$16.25 to \$16.75, based on sales to consumers and dealers. The market is stronger on compressed and bundled sheets, which have sold at \$15.50 to \$14.50, respectively, and is firm on the blast furnace grades. There is little demand for foundry grades and on cast scrap, cupola size, the market is weak.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Warehouse Prices, f.o.b. Pittsburgh		Per Gross Ton	
	Base per Lb.		
Tank plates	3.00c.	Heavy melting steel	\$16.25 to \$16.75
Structural shapes	3.00c.	No. 1 cast, cupola size	15.50 to 16.00
Soft steel bars and small shapes	2.90c.	Rails for rolling, Newark and	
Reinforced steel bars	2.90c.	Cambridge, Ohio; Cumberland,	
Black sheets (No. 28 gage), 25 or more		Md.; Huntington, W. Va., and	
bundles	4.00c.	Franklin, Pa.	17.00 to 18.00
Galvanized sheets (No. 28 gage), 25 or		Compressed sheet steel	15.00 to 15.50
more bundles	5.05c.	Bundled sheets, sides and ends ..	14.00 to 14.50
Blue annealed sheets (No. 10 gage), 25 or		Railroad knuckles and couplers ..	18.00 to 18.50
more sheets	3.55c.	Railroad coil and leaf springs ..	18.00 to 18.50
Cold-finished shafting and screw stock—		Low phosphorus blooms and bil-	
Rounds and hexagons	3.60c.	let ends	20.00 to 20.50
Squares and flats	4.10c.	Low phosphorus plates and other	
Bands	3.60c.	material	18.50 to 19.00
Spikes, large	3.30c.	Low phosphorus punchings	18.50 to 19.00
Small	3.80c. to 5.25c.	Steel car axles	20.50 to 21.00
Boat	3.80c.	Cast iron wheels	16.50 to 17.00
Bolts, track	4.90c.	Rolled steel wheels	18.00 to 18.50
Wire, black soft annealed, base per 100 lb.	\$3.00	Machine shop turnings	11.00 to 11.50
Wire, galvanized soft, base per 100 lb.	3.00	Short shoveling turnings	12.00 to 12.50
Common wire nails, per keg	3.00	Sheet bar crops	17.50 to 18.00
Cement coated nails	3.05	Heavy steel axle turnings	15.00 to 15.50
		Short mixed borings and turnings ..	12.00 to 12.50
		Heavy breakable cast	14.00 to 14.50
		Cast iron borings	12.00 to 12.50
		No. 1 railroad wrought	11.50 to 12.00
		No. 2 railroad wrought	16.25 to 16.75
		Railroad or automobile malleable	
		scrap	16.25 to 16.75

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F. o. b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rolling, 4-in. and over.....	\$35.00
Rolling, 2-in. and smaller.....	36.00
Forging, ordinary.....	40.00
Forging, guaranteed.....	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer.....	\$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
6 in. x 2 in. and smaller.....	36.00

Skelp

	Per Lb.
Grooved.....	1.90c.
Sheared.....	1.90c.
Universal.....	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base.....	\$45.00
Screw stock.....	\$5.00 per ton over base
Carbon 0.20% to 0.40%.....	3.00 per ton over base
Carbon 0.41% to 0.55%.....	5.00 per ton over base
Carbon 0.56% to 0.75%.....	7.50 per ton over base
Carbon over 0.75%.....	10.00 per ton over base
Acid.....	15.00 per ton over base

*Chicago mill base is \$46. Cleveland mill base, \$45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	Per Unit

Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian.....	9.50c. to 10c.
Iron ore, Swedish, average 66% iron.....	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus.....	42c.
Manganese ore, Brazilian or Indian, nominal.....	42c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates.....	\$11.25 to \$12.00
Chrome ore, Indian basic, 48% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard.....	\$22.00 to \$23.00
Molybdenum ore, 85% concentrates of MoS ₂ , delivered.....	.55c. to 60c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt.....	\$2.65 to \$2.85
Foundry, f.o.b. Connellsville prompt.....	4.00 to 4.50
Foundry, by-product, Ch'go ovens.....	9.75
Foundry, by-product, New England, del'd.....	12.00
Foundry, by-product, Newark or Jersey City, delivered.....	9.75 to 10.77
Foundry, Birmingham.....	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City.....	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines.....	\$1.40 to \$1.90
Mine run coking coal, f.o.b. W. Pa. mines.....	1.50 to 1.75
Mine run gas coal, f.o.b. Pa. mines.....	1.90 to 2.10
Steam slack, f.o.b. W. Pa. mines.....	1.25
Gas slack, f.o.b. W. Pa. mines.....	1.25 to 1.35

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$38.00 to \$95.00
Foreign, 80%, Atlantic or Gulf port, duty paid.....	88.00

Spiegleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$32.00 to \$34.00
Domestic, 16 to 19%.....	\$1.00 to \$3.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%.....	\$85.00 to \$87.50
75%.....	145.00

	Per Gross Ton Furnace	Per Gross Ton Furnace
10%.....	\$42.00	12%.....\$42.00
11%.....	42.00	14 to 16%..\$45 to 46.00

Bessemer Ferrosilicon

	Per Gross Ton	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace.....	\$33.00	12%.....\$37.00
10%.....	\$33.00	
11%.....	35.00	

Silvery Iron

	Per Gross Ton	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace.....	\$25.50	10%.....\$31.00
6%.....	26.50	11%.....33.00
7%.....	26.50	12%.....35.00
8%.....	27.50	
9%.....	29.00	

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd.....	\$1.05 to \$1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered.....	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace.....	\$3.25 to \$4.00
Ferrocobalt, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. Aniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.....	\$17.50 to \$17.75
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/4% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay

	Per 1000 f.o.b. Works
High Duty.....	
Moderate Duty.....	
Pennsylvania.....	\$40.00 to \$43.00
Maryland.....	43.00 to 46.00
New Jersey.....	55.00 to 75.00
Ohio.....	40.00 to 43.00
Kentucky.....	40.00 to 43.00
Illinois.....	40.00 to 43.00
Missouri.....	40.00 to 43.00
Ground fire clay, per ton.....	6.50 to 7.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania.....	\$40.00
Chicago.....	49.00
Birmingham.....	50.00
Silica clay, per ton.....	\$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.....	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.....	40.00

Chrome Brick

	Per Net Ton
Standard size.....	\$45.00 to \$48.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads.....	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Eagle carriage bolts.....	65 and 10
Lag bolts.....	60, 10 and 10
Flow bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, 3/4 x 4 in., larger and longer sizes.....	45, 10 and 5
Bolt ends with hot-pressed nuts.....	50, 10 and 10
Bolt ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list	
Hot-pressed nuts, blank or tapped, hexagons, 4.40c. per lb. off list	
C.p.c. and t. square or hex. nuts, blank or tapped.....	4.10c. per lb. off list
Washers*.....	.650c. to 6.25c. per lb. off list

*F.o.b. Chicago and Pittsburgh.
The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
1/2 in. and smaller, U. S. S.....	80, 10 and 5
3/4 in. and larger, U. S. S.....	75, 10 and 5
Small sizes, S. A. E.....	80, 10, 10 and 5
S. A. E., 3/4 in. and larger.....	75, 10, 10 and 5
Stove bolts in packages.....	80, 10 and 5
Stove bolts in bulk.....	80, 10, 5 and 2 1/2
Tire bolts.....	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per 100 Net S.A.E. U.S.S.	Per 100 Net S.A.E. U.S.S.
1/2-in.....	\$0.44 \$0.44	3/4-in.....\$2.35 \$2.40
3/4-in.....	0.515 0.515	1-in.....2.60 3.60
1-in.....	0.62 0.66	1 1/4-in.....5.65 5.90
1 1/4-in.....	0.79 0.90	1 1/2-in.....8.90 8.90
1 1/2-in.....	1.01 1.05	1 3/4-in.....12.60 13.10
1 3/4-in.....	1.38 1.42	2-in.....18.35 18.35
2-in.....	1.70 1.73	2 1/2-in.....21.00 21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh.....	\$2.50 to \$2.60
F.o.b. Cleveland.....	2.70
F.o.b. Chicago.....	2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh.....	70 and 10
F.o.b. Cleveland.....	70 and 10
F.o.b. Chicago.....	70, 10 and 5 to 70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws.....	80 and 10
Milled standard set screws, case hardened.....	80 and 5
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U. S. S. thread.....	80, 10 and 10
Upset hex. cap screws, S.A.E. thread.....	80, 10 and 10
Upset set screws.....	80, 10 and 5
Milled studs.....	70 and 5

Chicago

Pig Iron and Heavy Steel Products Active —Farm Equipment Makers Busy

CHICAGO, June 29.—The pig iron market is active, and since the inception of the present buying movement, two or three weeks ago, fully 250,000 tons has been sold both for forward and spot deliveries. Shipments and production of merchant pig iron during the twelve months just closing established new records.

Finished steel shipments from local mills in the first half of this year are also believed to have set a record. Moreover, both sales and specifications were considerably heavier than in the corresponding period last year. Present order books in the heavier rolled products are well filled. Although the mills are steadily discharging their obligations in rails and track supplies, they have more than made up that reduction in tonnage by their recent bookings in bars, plates and shapes. The buying movement in bars was particularly heavy, and some interests closed for their requirements at 2c., Chicago, prior to the recent advance. New commitments in the heavier finished products this month will exceed shipments. In fact, one important mill will show a gain in unfilled tonnage of 20 per cent.

Finished steel prices are steady, although higher prices than 2.10c., Chicago, on bars, plates and shapes have largely disappeared. Among the consuming industries the railroads are taking little interest in the market. Railroad car buying has almost ceased, and although the carriers are pressing for deliveries against contracts for track material, the fall buying movement in rails is believed to be several months away. The Great Northern, however, has just closed for 20,000 tons of rails. The automotive industry is still operating at a high rate, although certain motor car builders are curtailing output preparatory to bringing out new models. A local alloy steel bar mill, which caters largely to the automobile trade, continues to operate full. Among the farm equipment makers, plants manufacturing tractors and threshers are the busiest and are the most active in contracting for future requirements in materials. Producers of tillage tools are pursuing a more cautious course, pending later and more dependable information regarding crop prospects. In the construction field, demand for plates for oil storage tanks and for structural steel and reinforcing steel for bridges and buildings is still active. A bridge to be built across Lake Pontchartrain near New Orleans will require 9500 tons of reinforcing steel.

Pig Iron.—The market is active, and sales during the current buying movement are estimated at 250,000 tons. Melters are generally covering their third quarter requirements and, in some cases, have bought through the last half. Buyers appear to have made up their minds that the market is at bottom, or close enough to the bottom to warrant forward purchases. Spot buying has also been unusually heavy, having totaled for one week this month close to 50,000 tons. Prices appear to be holding at a minimum of \$21, base local furnace, for foundry and malleable grades, but there are still some melters who believe that the market may recede another 50c. They are impressed by the fact that basic iron in the Valley has declined during the week, portending the possibility of further pressure westward by irons made outside this district. There is also the prospect of keener competition in this immediate district as the result of the proposed blowing in of the Thomas furnace at Milwaukee, July 3. Against this, of course, is the stronger position of producers following the accumulation of substantial backlogs. There have been numerous recent sales of 1000 tons or more. The Holland Furnace Co., for example, purchased 2000 tons of foundry iron for last half delivery to its Holland, Mich., plant. Low phosphorus has declined on recent sales and is now quotable at \$29.50 to \$30, delivered. Fourteen to 15 per cent silvery is available at \$43.79 delivered, while

Bessemer ferrosilicon in the same silicon percentage is quoted at \$2 higher.

Quotations on Northern foundry high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00 to \$21.50
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50 to 22.00
Malleable, not over 2.25 sil.	21.00 to 21.50
High phosphorus	21.00 to 21.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	27.01
Southern No. 2 (barge and rail)	25.18
Low phosph., sil. 1 to 2 per cent, copper free	29.50 to 30.00
Silvery, sil. 8 per cent	32.29
Bessemer ferrosilicon, 14 to 16 per cent	45.79

Plates.—Local mills have well filled order books, one producer having the heaviest bookings in three years, with its capacity obligated for 60 days. The leading mill will furnish a total of 4500 tons of plates, shapes and bars for underframes, bodies and cars recently placed by the Fruit Growers Express, the Chicago & Northwestern and the Seaboard Air Line. There is little fresh car buying, although the railroads are undertaking considerable repair work. For 3200 car underframes which the Great Northern will require for car repairs at its Superior, Wis., shops, 5000 tons of steel will be bought. Fully 10,000 tons is accounted for in other inquiries for repair material. New oil storage tank projects in Texas call for a total of 15,000 tons of plates, and the week's bookings in plates for tanks in Oklahoma and Texas aggregated 2100 tons for one of the local mills. Tank plates are steady at 2.10c., Chicago, but it is doubtful whether much business is being closed at more than that figure.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Cast Iron Pipe.—Milwaukee opened bids last week on 1135 tons of 30 in. and 418 tons of 24-in. class C pipe, and the only bidder was the United States Cast Iron Pipe & Foundry Co., with a tender of \$46.90, delivered, the equivalent of \$38.40, base Birmingham. The concession was made, no doubt, because of the tonnage and the large diameters. On ordinary tonnages the market appears to range from \$40 to \$41.50, base Birmingham, with the lower price available only on attractive lots in diameters above 12 in. Pending business includes: Chicago, 1140 tons of 8-in., class B, bids to be in July 6. Alliance, Ohio, 200 tons of 6, 8 and 10-in., class C, July 15. Wheaton, Ill., 225 tons of 4 and 6-in., class B; W. D. Hallett, Aurora, Ill., low bidder on general contract. Palatine, Ill., 1000 tons of 6, 8 and 12-in., class C; J. L. Frye, Lake Forest, Ill., low bidder. Halfway, Mich., 2000 tons of 6 and 8-in., class B; general contracts divided between John A. McDace Co. and Lester J. Clancy, Detroit.

We quote per net ton, delivered Chicago, as follows: Water pipe, 4-in., \$52.20 to \$53.70; 6-in. and over, \$48.20 to \$49.70; Class A and gas pipe, \$4 extra.

Ferroalloys.—Outside of a few carlot inquiries for spiegeleisen, the market is without features. The 18 to 22 per cent grade is still bringing a minimum of \$32, Eastern furnace, but it is possible that this price would be shaded on a large tonnage.

We quote 80 per cent ferromanganese, \$95.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$39.76 to \$41.76, delivered Chicago.

Bolts, Nuts and Rivets.—Contracting for third quarter requirements in bolts and nuts has been practically concluded at unchanged discounts. Specifications this month have shown improvement over those of May and April, which reflected the inactivity of the farm implement plants after their spring production programs were completed. Although still somewhat cautious because of the uncertainty of the crop outlook, the agricultural machinery makers are again specifying in preparation for increased operations in July and August. Small rivets, in most transactions, range from 70 and 10 and 5 off to 70 and 10 per cent off, Chicago, but as low as 75 and 10 and 5 off is reported. On large rivets, \$2.75, Chicago, still holds.

Sheets.—Mills are still suffering from a lack of forward buying. A Chicago district producer is running 23 out of 28 hot mills this week, but cannot see better than 50 to 60 per cent operations next week. Competition is still keen, particularly in neutral territories and at the head of the Lakes, where water and rail rates have made Eastern mills a factor. Galvanized and black sheets are weaker than blue annealed. Galvanized is now rather generally quotable at 4.40c., Chicago district mill.

Chicago delivered prices from mill are 3.30c. for No. 28 black; 2.45c. to 2.50c. for No. 10 blue annealed; 4.45c. to 4.50c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Structural Material.—Structural lettings are still in good volume, but increasingly sharp competition among fabricators would indicate that a summer lull in business is feared. Mills are well booked in plain material and are holding to 2.10c., Chicago, on new business. Few sales, however, are being made at higher than that price.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Rails and Track Supplies.—The Great Northern has placed orders for 20,000 tons of rails, of which 10,000 tons went to the Illinois Steel Co., 7000 tons to the Bethlehem Steel Co., and 3000 tons to the Inland Steel Co. About 3000 tons of spikes, bolts and angle bars were apportioned with the rail orders. Although the railroads are still pressing for deliveries of rails and fastenings, the mills are reducing their backlogs in those materials. This reduction in unfilled tonnage has been more than made up, however, by recent bookings in bars, plates and shapes. There is considerable pending inquiry for track supplies, and prices on steel tie plates range from 2.25c. to 2.35c., mill.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.25c. to 2.35c. mill; angle bars, 2.75c. mill.

Wire Products.—With mill production ranging from 50 to 60 per cent of capacity, specifications are equal to shipments, and a fair amount of third-quarter contracting is being done, particularly by manufacturing users. Jobbers are more cautious in covering their forward needs. Nail demand is disappointing. A normal increase in the consumption of nails, based on the growth in population, would be 20,000,000 kegs a year. Instead, there has been a decrease of about 20 per cent per year. This is the result of a decline in building in the country districts, the substitution of stucco and brick houses for frame buildings, and the replace-

ment of wooden sidewalks, culverts and trestles with more permanent types of construction. The wider use of paper cartons for shipping goods, displacing wooden packing boxes, has also been a factor. Mill prices, which are firm, are shown on page 35.

Old Material.—Greater confidence on the part of dealers, reflected in heavier purchases of railroad offerings at advancing prices, and insistence by an important consumer of heavy melting steel on stricter adherence to specifications have both been factors in stiffening the market. It is felt by the trade that scrap prices went too low, and hence speculative buying in anticipation of further advances is in progress. The present desire is to buy rather than to sell. In fact, a user of heavy melting steel has offered as high as \$14 without interesting sellers. The only cause for apprehension on the part of the trade is that scrap is showing strength at a time of the year when a summer lull in industry generally sets in. In fact, some sellers count on such a seasonal reaction to buy material profitably to fill orders which they hope to close on the present advancing market. Others are buying railroad material at above the current market in the belief that prices will go higher than those they are now paying. The Burlington has advertised 5000 tons, the Big Four an equal tonnage, and the Chicago & Northwestern 6000 tons, of which 2000 tons is rerolling rails.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton	
Heavy melting steel.....	\$13.50 to \$14.00
Frogs, switches and guards, cut apart, and miscellaneous rails.	14.50 to 15.00
Shoveling steel	13.25 to 13.75
Hydraulic compressed sheets....	11.50 to 12.00
Drop forge flashings.....	9.50 to 10.00
Forged, cast and rolled steel car wheels	17.00 to 17.50
Railroad tires, charging box size.	17.50 to 18.00
Railroad leaf springs, cut apart..	17.00 to 17.50
Steel couplers and knuckles.....	16.00 to 16.50
Coil springs	17.50 to 18.00
Low phos. punchings.....	16.00 to 16.50
Axle turnings, foundry grade....	14.00 to 14.50
Axle turnings, blast fur. grade..	12.00 to 12.50
Relaying rails, 56 to 60 lb.....	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Rerolling rails	16.50 to 17.00
Steel rails, less than 3 ft.....	16.50 to 17.00
Iron rails	14.00 to 14.50
Cast iron borings.....	10.50 to 11.00
Short shoveling turnings.....	10.50 to 11.00
Machine shop turnings.....	7.00 to 7.50
Railroad malleable	17.00 to 17.50
Agricultural malleable	15.50 to 16.00
Angle bars, steel.....	15.50 to 16.00
Cast iron car wheels.....	16.00 to 16.50

Per Net Ton	
No. 1 machinery cast.....	16.75 to 17.25
No. 1 railroad cast.....	16.00 to 16.50
No. 1 agricultural cast.....	16.00 to 16.50
Stove plate	13.75 to 14.25
Grate bars	13.50 to 14.00
Brake shoes	13.00 to 13.50
Iron angle and splice bars.....	14.00 to 14.50
Iron arch bars and transoms....	19.50 to 20.00
Iron car axles.....	24.00 to 24.50
Steel car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	12.00 to 12.50
No. 1 busheling.....	10.00 to 10.50
No. 2 busheling.....	6.00 to 6.50
Locomotive tires, smooth.....	16.50 to 17.00
Pipes and flues.....	9.00 to 9.50

Mill Operations.—Local mill operations average about 90 per cent of capacity. Out of 36 steel works blast furnaces in this district, 29 are active.

Warehouse Business.—Buying out of warehouse has been active. In fact, for one important jobber, business closed this month will probably establish a new record.

Bars.—Sales of soft steel bars by local mills in the month now closing will show a material gain over the total for May. In fact, it is probable that most important buyers have covered for most of their third quarter requirements. On new business 2.10c., Chi-

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Mild steel bars.....	3.00c.
Reinforcing bars, billet steel.....	2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 28 black sheets.....	4.10c.
No. 10 blue annealed sheets.....	3.50c.
No. 28 galvanized sheets.....	5.25c.
Standard railroad spikes.....	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent Off List
Machine bolts .....	.50 and 5
Carriage bolts .....	.47½
Coach or lag screws.....	.55 and 5
Hot-pressed nuts, square, tapped or blank,	
3.25c. off per lb.	
Hot-pressed nuts, hexagons, tapped or blank,	
3.75c. off per lb.	
No. 8 black annealed wire, per 100 lb.....	\$3.30
Common wire nails, base, per keg.....	3.05
Cement coated nails, base, per keg.....	3.05

(Concluded on page 52)

Cleveland

Pig Iron Sales for Week 200,000 Tons— Steel Prices Tightening

CLEVELAND, June 29.—Mills are getting good specifications for steel bars, and the third quarter will start with nearly all the tonnage taken under second quarter 1.90c. Pittsburgh, contracts. Some additional business has been taken at 2c., although mills have booked few third-quarter contracts. Efforts to get 2.10c. on lots of 100 tons and under have so far proved successful only to the extent that some carlot business has been taken at the advance. Structural material is holding to the recent advance to 2c., Pittsburgh. Plates are firm at 1.90c., Pittsburgh. Some buyers who have been able to get concessions by putting themselves in the preferred customer class are finding the lines more tightly drawn and are paying the regular price. Prospects in the Lake ship building industry have been brightened by new inquiries for three freight boats, two for one interest and one for another. These will require 15,000 tons of plates. With the new inquiries there are now ten Lake vessels pending, seven large freight boats and three car ferries. The 2000 tons of plates for 50 Illinois Central locomotives placed with an Ohio builder have been divided. A Cleveland and an Eastern mill will furnish the boiler and fire-box steel and the tank plates will go to a Pittsburgh district mill. Mills continue to get a fair volume of orders from the automobile industry. Several of the Detroit motor car builders will shut their plants down July 1 for inventory. One large manufacturer who has brought out a new model will increase daily output 200 cars July 1.

Pig Iron.—The pig iron buying movement gained in momentum the past week and Cleveland interests made sales of foundry and malleable iron aggregating about 200,000 tons. The business was well scattered in northern and southern Ohio, Michigan, Indiana and New York. In Michigan the automotive industry, which had not previously participated to more than a limited extent in the present buying movement, came in the market and purchased considerable iron in lots up to 10,000 tons. The American Radiator Co. placed about 20,000 tons for its Springfield, Ohio, and Detroit plants out of a total reported purchase of 60,000 tons for its various plants. The Michigan stove and heating furnace manufacturers were also liberal buyers. The heavy buying in Michigan was preceded by another 50c. cut in prices to \$19 to \$19.50 at furnace. Prices in northern Ohio and the Valley district during the week did not change, but the market has a little firmer tone and some of the furnaces are showing less disposition than they did to reach far out of their immediate territories and take business by absorbing freight rates. Most business in northern Ohio is taken on a basis of \$18, Lake or Valley furnace. One Cleveland producer has advanced its price for outside shipment to \$18.50, which is also now being quoted by one Valley furnace. For Cleveland delivery the price is unchanged at \$19. Up to the past week buying had been about evenly divided between third quarter and last half, but the business placed the past week was almost all for the entire last half. A Muncie, Ind., foundry placed 3000 tons of malleable iron, which is understood to have gone to a Lake furnace, and a Columbus foundry is inquiring for 1000 tons of malleable. There was not much buying by

Cleveland consumers during the week, but two or three local consumers are in the market for 8000 to 10,000 tons. Two inquiries have come out for basic iron, one from Alliance for 3000 tons and one from western Pennsylvania for 5000 tons. Makers of Ohio silvery iron that have been asking \$1 more for the fourth quarter are now offering to take orders for the entire last half at the regular schedule.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6.01 from Birmingham:

Basic, Valley furnace.....	\$18.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25.....	19.50
Southern fdy., sil. 1.75 to 2.25.....	\$26.51 to 27.01
Malleable	19.50
Ohio silvery, 8 per cent.....	30.52
Standard low phos., Valley furnace	27.50

Iron Ore.—The market is showing a little more life than for some time. One consumer during the week purchased several lots aggregating 100,000 tons and another sale of 10,000 tons was made. An inquiry for 100,000 tons is pending.

Semi-Finished Steel.—A Pittsburgh district consumer has purchased 6000 tons of billets from a Cleveland mill for the last half at \$35, Pittsburgh, the seller having to absorb considerable freight rate to reach the consumer on the same basis as Pittsburgh mills. Some additional sheet bar business has been taken by this producer at \$36, Cleveland, which gives the buyer an advantage as compared with a Youngstown basing point. However, very few consumers of semi-finished steel have as yet placed third-quarter contracts. Youngstown mills are holding to regular quotations. Sheet bar specifications have fallen off because a number of mills will shut down over the holiday.

Bolts, Nuts and Rivets.—Manufacturers report that June orders for bolts and nuts will show a gain of about 10 per cent over May. Many consumers have placed contracts for the third quarter at present discounts. Specifications are holding up to recent volume. Rivet consumers are coming in quite freely with third quarter contracts at \$2.60 per cwt. for large rivets.

Sheets.—Orders and inquiry show an improvement and the market is firmer at least to the extent that some of the low prices that appeared two or three weeks ago are no longer being quoted. Black sheets can still be bought at 3c., base, Pittsburgh, for the heavier gages, but 3.10c. is now the more common price for lighter gages. Blue annealed sheets are fairly firm at 2.30c. Galvanized sheets can still be bought at 4.30c. Valley base, or equivalent, to 4.20c., Pittsburgh. Consumers as a rule are buying for early requirements and few have placed third-quarter contracts.

Strip Steel.—The demand for cold-rolled strip is fair, but competition is very keen. The market has settled down to 3.60c., Cleveland and Pittsburgh, although some round lot orders are reported to have been taken at 3.50c. Mills are still getting 3.75c. for small lots. New demand for hot-rolled strip is light, but prices are firm.

Reinforcing Bars.—Inquiry is limited to small lots for which there is a fair demand. New billet steel bars are commonly quoted at 2c., Pittsburgh, although a round tonnage would probably bring out a 1.90c. price. Rail steel bars are unchanged at 1.80c., mill.

Warehouse Business.—Orders for steel bars, plates and structural material showed a gain in number over May, but the tonnage was lighter. Prices are firm. The demand for sheets out of stock has increased materially. Sheet prices are still irregular.

Coke.—The price of Ohio by-product foundry coke has been fixed at \$7.50 for July shipment, being unchanged from this month. Connellsville foundry coke is unchanged at \$4 to \$5.50. There is some activity in by-product coke for domestic use, which has further advanced 25c. a ton to \$5 for egg coke and \$4.50 for nut.

Old Material.—The firmer tone in the market reported a week ago is still in evidence and prices on several grades have advanced 25c. a ton after dealers found that old prices were not bringing out material.

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	3.00c.
Mild steel bars.....	3.00c.
Cold-finished rounds and hexagons.....	3.90c.
Cold-finished flats and squares.....	4.40c.
Hoops and bands.....	3.65c.
No. 28 black sheets.....	3.85c.
No. 10 blue annealed sheets.....	3.15c.
No. 28 galvanized sheets.....	5.00c.
No. 9 annealed wire, per 100 lb.....	\$3.00
No. 9 galvanized wire, per 100 lb.....	3.45
Common wire nails, base, per keg.....	3.00

Consumers are showing no interest. Dealers are paying \$10.25 for machine shop turnings, an advance of 25c. A Cleveland mill has released shipments on heavy melting steel and this has made the market on that grade firmer. July scrap lists have been sent out by Detroit automobile plants. Some of these are nearly as large as a month ago, but others are much smaller. These lists, made up largely of borings and turnings, flashings and compressed steel, include Dodge Brothers, 6500 tons; Chevrolet, 1500 tons, and Chrysler, 2200 tons. The Briggs Mfg. Co., Detroit, will take bids June 30 on 5000 tons of compressed sheet steel. Larger items in July railroad offerings include 5000 tons of rails on the New York Central list and 1000 tons of heavy melting steel on the Big Four list.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel.....	\$13.75 to \$14.25
Rails for rolling.....	16.25 to 16.50
Rails under 3 ft.....	17.00 to 17.50
Low phosphorus billet, bloom and slab crops.....	18.00 to 18.50
Low phosphorus sheet bar crops.....	18.00 to 18.75
Low phosphorus plate scrap.....	18.00
Light plate scrap.....	17.50
Low phosphorus forging crops.....	16.75 to 17.25
Cast iron borings.....	11.00 to 11.50
Machine shop turnings.....	9.75 to 10.25
Mixed borings and short turnings.....	11.00 to 11.50
Compressed sheet steel.....	13.00 to 13.25
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	13.75 to 14.25
Railroad malleable.....	18.00 to 18.50
Light bundled sheet stampings.....	11.00 to 11.50
Steel axle turnings.....	12.50 to 13.00
No. 1 cast.....	16.50 to 17.00
No. 1 busheling.....	11.50 to 12.00
No. 2 busheling.....	10.75 to 11.25
Drop forge flashings, 15 in. and under.....	11.50 to 12.00
Railroad grate bars.....	12.50 to 13.00
Stove plate.....	11.50 to 12.00
Pipes and flues.....	10.00 to 10.50

New York

Pig Iron Sales, 35,000 to 40,000 Tons—Third Quarter Bars at the New Price

NEW YORK, June 29.—It is estimated that purchases of the past week in this district have totaled between 35,000 and 40,000 tons of pig iron and there is 10,000 tons or more of inquiry before the market, not including iron for the Richmond Radiator Co., which will close this week on about 1500 tons for Norwich, Conn., and a considerable tonnage for Uniontown, Pa. The Massachusetts and New York State furnaces have been particularly active and two of the northern New York furnaces are reported to have booked close to 18,000 tons in the past week. Eastern Pennsylvania furnaces are not making the concessions that would be necessary to bring them into this New England competition. They seek to maintain the \$21.50 basis in what is strictly their territory, with the possibility of \$21 on a desirable lot in the New York district. While Buffalo furnaces have quoted on a basis of \$19, with silicon differentials, competition on sizable business with northern New York and the Massachusetts producers has brought out \$18.50 and lower. The purchase by the American Radiator Co. of 60,000 tons in the past fortnight, of which about 20,000 tons was closed last week, is understood to have been for Southern and Western plants. The Richardson & Boynton Co., Dover, N. J., buying for third and fourth quarter, is understood to have placed 4000 tons of No. 2 plain with eastern Pennsylvania furnaces and 3900 tons of No. 2X with Buffalo, Rochester and Troy producers, 100 tons of special analysis going to a Virginia furnace. One lot of 15,000 tons of foundry is reported to have been placed in this district in the past week. The 10,000 tons of foundry iron for the H. B. Smith Co., Westfield, Mass., reported last week, is understood to have gone to two Buffalo and two northern New York furnaces. Foreign pig iron is a small factor in the present market, although one importer closed about 2000 tons with a New England consumer. The price of German iron is still about \$20.50 per ton, duty paid. An importer with a stock of a few thousand tons at Providence, R. I., reports

practically all this supply under contract for third-quarter delivery.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East Pa. No. 2 fdy., sil. 1.75 to 2.25.....	\$23.52 to \$24.02
East Pa. No. 2X fdy., sil. 2.25 to 2.75.....	24.02 to 24.52
East Pa. No. 1X fdy., sil. 2.75 to 3.25.....	24.52 to 25.02
Buffalo fdy., sil. 1.75 to 2.25 (all-rail).....	23.41 to 23.91
Buffalo fdy., sil. 1.75 to 2.25 (by barge canal, del'd alongside in lighterage limits, N. Y. and Brooklyn).....	22.75
No. 2 Virginia fdy., sil. 1.75 to 2.25.....	27.54 to 28.04

Ferroalloys.—There continues to be practically no demand for ferromanganese, consumers being well covered by contract for some time to come. There are occasional sales of carload and small lots at unchanged quotations. The foreign electric alloy is obtainable at \$88, seaboard. There is no activity in spiegeleisen,

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes.....	3.34c.
Soft steel bars and small shapes.....	3.24c.
Iron bars.....	3.24c.
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons.....	4.00c.
Flats and squares.....	4.50c.
Cold-rolled strip, soft and quarter hard.....	6.25c.
Hoops.....	4.49c.
Bands.....	3.99c.
Blue annealed sheets (No. 10 gage).....	3.89c.
Long terme sheets (No. 28 gage).....	6.35c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galvanized annealed.....	5.15c.
Tire steel, 1½ x ½ in. and larger.....	3.30c.
Smooth finish, 1 to 2½ x ½ in. and larger.....	3.65c.
Open-hearth spring steel, bases.....	4.50c. to 7.00c.
Per Cent Off List	
Machine bolts, cut thread.....	.40 and 10
Carriage bolts, cut thread.....	.30 and 10
Coach screws.....	.40 and 10
Boiler Tubes—	
Per 100 Ft.	
Lap welded steel, 2-in.....	\$17.33
Seamless steel, 2-in.....	20.24
Charcoal iron, 2-in.....	25.00
Charcoal iron, 4-in.....	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	4	+19
¾-in. butt.....	11	+9
1-1½-in. butt.....	14	+6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+6
7-12-in. lap.....	3	+16

Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100-lb. base box.....	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
IXX.....	13.90	16.00

Terne Plate (14 x 20 in.)

IC—20-lb. coating.....	\$10.00 to \$11.00
IC—30-lb. coating.....	12.00 to 13.00
IC—40-lb. coating.....	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass†

	Per Lb.
Nos. 18 to 20.....	4.15c. to 4.30c.
Nos. 22 and 24.....	4.20c. to 4.35c.
No. 26.....	4.25c. to 4.40c.
No. 28*.....	4.35c. to 4.50c.
No. 30.....	4.55c. to 4.70c.

Sheets, Galvanized†

	Per Lb.
No. 14.....	4.45c. to 4.60c.
No. 16.....	4.60c. to 4.75c.
Nos. 18 and 20.....	4.75c. to 4.90c.
Nos. 22 and 24.....	4.90c. to 5.05c.
No. 26.....	5.05c. to 5.20c.
No. 28*.....	5.35c. to 5.50c.
No. 30.....	5.85c. to 6.00c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

†Lower price is for lots of 50 bundles or more.

consumers also being well covered, but there is the usual small lot and carload business at unchanged prices.

Finished Steel.—Buyers of steel have been specifying fairly well on their second quarter contracts, which expire tomorrow, and the amount of business booked in plates, shapes and bars in the past week has been fairly substantial. Demand for other products, especially pipe and tin plate, has held up well, and when the month's sales records are compiled it is expected that almost a record tonnage will be shown for sales for June. In addition to rounding up specifications on second quarter contracts, the steel trade has been making a fair number of third quarter contracts. On bars and structural shapes these are at an advance of \$2 a ton over second quarter prices. Plate contracts are being entered at the second quarter price, 1.90c., Pittsburgh. There is no evidence of speculative buying of the two products which have been advanced; hence it is fair to assume that the fairly large orders of the past few weeks represent steel that is going early into consumption. In some instances buyers have not specified bar contracts for second quarter in full, explaining that they prefer to take the chance of paying \$2 more rather than carry more inventory than they consider wise. If there is any special explanation for the generally increased buying in June it probably lies in the fact that many buyers allowed their inventories to run low in the expectation that prices of other products might decline as sheets have done. Except for an advance of 10c. per 100 lb. on cut nails, there have been no price changes within the week. Cut nails are now offered by the two makers at \$2.85, Reading, Pa., per 100 lb. in carload lots and at \$2.95 for less carloads. Sheet prices are holding at about the levels of last week, 3c. to 3.15c. on black, 4.30c. to 4.40c. on galvanized, and 2.30c. to 2.40c. on blue annealed, Pittsburgh base.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Cast Iron Pipe.—Most makers are in a satisfactorily booked position on the smaller sizes for the next 60 to 90 days, evidence of which is shown in the quotations submitted on the 2500 tons of 6, 8 and 12-in. pipe and 250 tons of fittings for the Department of Purchase, New York, bids on which were opened June 28. While there were five bidders on the fittings only three quoted on the pipe. The United States Cast Iron Pipe & Foundry Co. was low on the pipe with a bid of \$51.95 per ton and the Talladega Foundry & Machine Co. was low on the fittings at \$115 per ton, delivered New York. The 2300 tons of 12 and 20-in. pipe for the Havana Electric Co., Havana, Cuba, is reported placed with an American maker. The recent reduction of about \$4 in the freight rate via the Florida keys to Havana is understood to have been a factor in securing this business in competition with the large French maker.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$50.60 to \$52.60; 4-in. and 5-in., \$55.60 to \$57.60; 3-in., \$65.60 to \$67.60; with \$5 additional for Class A and gas pipe.

Warehouse Business.—The volume of business for June will evidently equal the May figure. Prices are reported quite firm on practically all products, although there is still a tendency to offer less than 50 bundles of black or galvanized sheets at the price established for 50 bundles or more. Demand for structural material is continuing in particularly good volume considering the season and a fair tonnage of reinforcing bar business is moving.

Coke.—Although demand is apparently small, a fair tonnage of carloads and occasional purchases of 1000 tons or more are reported. Spot foundry is obtainable at \$4 per ton Connellsville and a brand that has been selling for \$5.50 per ton has been reduced to \$5.25. Furnace is about \$3 per ton. Standard foundry is quoted at \$7.91 to \$9.16 per net ton, delivered Newark and Jersey City, N. J., \$8.03 to \$9.28, delivered northern New Jersey and \$8.79 to \$10.04, delivered New York or Brooklyn, N. Y. By-product is unchanged at \$7.75 to \$10.77, delivered Newark or Jersey City, N. J.

Old Material.—On most grades of scrap, particularly heavy melting steel of railroad quality or equivalent, there is an undercurrent of considerable strength. This is evidently caused in part by a few holders of scrap who are not inclined to sell at present prices and by a few brokers, convinced that the market has reached bottom, who are fulfilling contracts at higher prices. The payment of higher prices has been particularly evident on recent railroad lists, parts of which have been purchased for shipment to eastern Pennsylvania consumers at prices reported to have been higher than outstanding contracts with those mills. While \$14.50 per ton is still the minimum quotation for delivery to eastern Pennsylvania of heavy melting steel, brokers' prices range up to as high as \$15.50 and slightly more. Buying prices of machine shop turnings have been stronger lately, and railroad wrought, relaying rails, railroad malleable and stove plate for steel mills are firm as a result of the activity of a few brokers who seem to expect an advance in the market.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$9.75 to \$10.25
Heavy melting steel (railroad or equivalent)	11.25 to 12.25
Rolls for rolling.....	12.00 to 12.50
Relaying rails, nominal.....	23.00 to 24.00
Steel car axles.....	18.50 to 19.00
Iron car axles.....	22.00 to 22.50
No. 1 railroad wrought.....	13.50 to 14.00
Forge fire	9.50 to 10.00
No. 1 yard wrought, long.....	12.00 to 12.50
Cast borings (steel mill).....	9.25 to 9.75
Cast borings (chemical).....	12.00 to 13.00
Machine shop turnings.....	9.25 to 9.75
Mixed borings and turnings.....	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	10.25 to 10.75
Stove plate (steel mill).....	9.50 to 10.00
Stove plate (foundry).....	10.25 to 10.50
Locomotive grate bars.....	10.50 to 11.50
Malleable cast (railroad).....	16.00 to 16.50
Cast iron car wheels.....	12.25 to 12.75
No. 1 heavy breakable cast.....	12.00 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.50 to \$17.00
No. 1 heavy cast (columns, building material, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	14.00 to 14.50

Philadelphia

Pennsylvania Railroad Opens Bids on 30,000 Tons of Steel—Pig Iron Weaker

PHILADELPHIA, June 29.—Bids opened on Monday at the offices of the Pennsylvania Railroad on about 30,000 tons of steel disclosed almost uniform quotations on plates, shapes, bars and wire products and only slight variations on sheets. The widest variation in prices was on axles. A noteworthy feature of the bids was that practically all were on an f.o.b. mill basis, Pittsburgh basing being entirely eliminated. There were 11 bidders on plates, nine of which located in the East bid 1.90c., mill, and two in Chicago bid 2.10c., mill. Nine mills bid on bars, seven naming 2c., mill, and two mills in Chicago quoted 2.10c. On structural shapes Carnegie Steel Co., the Jones & Laughlin Steel Corporation and the Bethlehem Steel Corporation bid 2c.; the Phoenix Iron Co. bid 2.15c., Phoenixville, Pa., and the Eastern Steel Co. bid 1.95c., Pottsville, Pa.; Chicago mills quoted 2.10c.

On sheets the following bids were submitted: Bethlehem Steel Corporation, 2.685c. on blue annealed, 3.435c. on black and 4.685c. on galvanized, all delivered Altoona, Pa.; United Alloy Steel Corporation, 2.40c. on blue annealed, 3.15c. on black and 4.30c. on galvanized, f.o.b. mill; American Sheet & Tin Plate Co., 2.30c. on blue annealed, 3.15c. on black and 4.30c. on galvanized, f.o.b. mill; Weirton Steel Co., 2.40c. on blue annealed, 3.10c. on black and 4.30c. on galvanized at mill; National Enameling & Stamping Co., 2.55c. on blue annealed, 3.35c. on black and 4.50c. on galvanized at mill; Wheeling Steel Corporation, 2.40c. on blue annealed, 3.15c. on black and 4.30c. on galvanized, f.o.b. mill; Youngstown Sheet & Tube Co., 2.40c. on blue annealed, 3.15c. on black and 4.30c. on galvanized; Falcon Steel Co., 2.40c. on blue annealed and 3.05c. on black; Apollo Steel Co., 2.30c. on blue annealed, 3.10c. on black

and 4.30c. on galvanized; Newport Rolling Mill Co., 2.45c. on blue annealed, 3.45c. on black and 4.50c. on galvanized; Republic Iron & Steel Co., 3.30c. on black and 4.30c. on galvanized; Trumbull Steel Co., 2.30c. on blue annealed, 3.10c. on black and 4.25c. on galvanized; Inland Steel Co., 2.40c. on blue annealed, 3.25c. on black and 4.40c. on galvanized; Alan Wood Iron & Steel Co., 2.40c. on blue annealed.

On car and tender axles the Carnegie Steel Co. bid 2.50c. per lb., f.o.b. mill. The next lowest bid was 2.65c., Chicago, by the Illinois Steel Co. The Bethlehem Steel Corporation bid 3c., Johnstown. Corresponding bids were submitted on other grades of axles.

Buying of steel products has continued at a very good rate and some selling offices in Philadelphia report that their June sales will exceed those of May and will break some June records.

Pig Iron.—New competitive conditions in the Eastern pig iron markets have forced eastern Pennsylvania furnaces to follow the lead of furnaces in other districts in reducing prices. With Buffalo iron quoted at \$18 to \$19, the furnaces of that district are reaching farther into what has been termed eastern Pennsylvania territory. Moreover the furnaces of this district are now practically shut out of New England because of the keen competition among Buffalo, Port Henry, N. Y., and Troy, N. Y., furnaces and the new Mystic furnace at Everett, Mass. Even at points as near by as Dover, N. J., the eastern Pennsylvania furnaces were unable to compete unless they were willing to accept a price close to \$20, furnace, and the business of the Richardson & Boynton Co. at that place, amounting to 8600 tons for second half shipment, will go to Buffalo and Troy furnaces. The highly competitive situation will be intensified by the blowing in of the McKinney Steel Co.'s furnace at Charlotte, N. Y., which will have about 30,000 tons of iron to dispose of. Some of the Eastern furnaces are accumulating stock piles of considerable proportions. Sales have been at a better rate in the past week and included about 5000 tons of foundry iron covering last half requirements of the National Radiator Co., Trenton, N. J. The Westinghouse Electric & Mfg. Co. bought 400 tons of Bessemer and No. 3 foundry for its Essington, Pa., foundry. The J. L. Mott Iron Works, Trenton, N. J., is inquiring for 1000 tons. One of the steel companies is sounding out the basic iron market with a view to buying several thousand tons, and another, usually supplied from Pittsburgh, is considering the purchase of 10,000 tons. Basic iron has been quoted at \$21.25 to \$21.75, delivered.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	21.76 to 22.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 22.76
East. Pa. No. 1X.	22.76 to 23.26
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivered eastern Pa.	21.25 to 21.50
Gray forge	21.50 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00

Ferromanganese.—The market is dull and prices are unchanged at \$88 to \$90, furnace.

Billets.—Quotations continue at \$35, Pittsburgh, for rerolling billets and at \$40 for ordinary forging billets.

Plates.—A fairly good volume of plate orders in small tonnages has come to Eastern mills in the past week. Most of the mills are operating at 60 to 75 per cent. Quotations are unchanged at 1.90c., Pittsburgh.

Structural Shapes.—Small fabricated projects are numerous, but there are no large jobs in the market. The demand upon the mills for plain material since the recent advance to 2c., Pittsburgh, has been substantial, and June may be one of the best months of the year in total structural orders. There are outstanding protections at 1.90c., Pittsburgh, but on new business quotations are at 2c., with the exception of one Eastern mill, which quotes 1.90c.

Bars.—No large amount of contracting for third quarter has been done, but buyers are taking out 1.90c. contracts almost in full. The volume of demand for concrete reinforcing bars has been disappointing to the mills and warehouses. Quotations on new business are at 2c., Pittsburgh.

Sheets.—Some of the extremely low prices on black sheets seem at least partially to have disappeared. A considerable part of the current business is at 3.10c. and 3.15c., Pittsburgh. Blue annealed sheets continue at 2.30c. to 2.40c. and galvanized at 4.30c. to 4.40c., Pittsburgh.

Old Material.—Three steel plants in this district last week brought pressure to bear on brokers for quicker deliveries, and the effect was a slight bidding up of prices on heavy melting steel. Brokers paid as high as \$15.75 on \$15.50 orders for steel scrap and one paid \$13.65 for machine shop turnings to apply against a \$13.50 order. A mill bought a tonnage of turnings at \$13.50, but there was no mill buying of heavy steel scrap. However, a steel company is now in the market, but has not offered above \$15.50, at which price brokers are not inclined to do business. The scrap situation shows a little greater strength largely because of the withholding of supplies by industrial plants and yard dealers, who do not regard prices as high enough for selling.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	\$14.50 to \$15.50
Scrap rails	15.00 to 15.50
Steel rails for rolling	15.50 to 16.00
No. 1 low phos., heavy, 0.04 per cent and under	19.00 to 20.00
Couplers and knuckles	17.00 to 17.50
Rolled steel wheels	17.00 to 17.50
Cast iron car wheels	17.00 to 17.50
No. 1 railroad wrought	16.50 to 17.00
No. 1 yard wrought	16.00 to 16.50
No. 1 forge fire	13.00 to 13.50
Bundled sheets (for steel works)	13.50
Mixed borings and turnings (for blast furnace)	12.50 to 13.00
Machine shop turnings (for steel works)	13.50
Machine shop turnings (for rolling mills)	13.50 to 14.00
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mill)	13.50
Cast borings (for chemical plant)	15.00 to 15.50
No. 1 cast	17.00 to 18.00
Heavy breakable cast (for steel works)	16.50
Railroad grate bars	13.50 to 14.00
Stove plate (for steel works)	13.50 to 14.00
Wrought iron and soft steel pipes and tubes (new specifications)	14.50 to 15.00
Shafting	20.00 to 21.00
Steel axles	21.50 to 22.00

Imports.—Pig iron imports last week amounted to 4961 tons, of which 3170 tons came from England, 1750 tons from Germany and 41 tons from Sweden. Other imports were: Structural steel from Belgium, 370 tons; cast iron pipe from France, 132 tons; steel bars from Sweden, 27 tons; hoop steel from England, 30 tons; galvanized steel strips from England, 42 tons.

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, $\frac{3}{4}$ -in. and heavier	2.80c. to 3.00c.
Tank steel plates, $\frac{1}{2}$ -in.	3.00c.
Structural shapes	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands)	3.00c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, $1\frac{1}{2} \times 1\frac{1}{2}$ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to $\frac{1}{4}$ -in., inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 28 black sheets	4.35c.
No. 10 blue annealed sheets	3.40c.
No. 28 galvanized sheets	5.55c.
Diamond pattern floor plates— $\frac{1}{4}$ -in.	5.30c.
$\frac{1}{2}$ -in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Swedish iron bars	6.00c. to 6.50c.

San Francisco

1500 Tons of Continental Coke Arrives— Fresh Inquiry for Steel Is Light

SAN FRANCISCO, June 26 (*By Air Mail*).—In a week lacking important features, the arrival of 1500 net tons of Continental coke, the letting of 3275 tons of structural steel for fabrication, and the disinclination of buyers to test the strength of mill quotations on plates are leading developments. While most of the Eastern mills continue to quote plates at 2.30c. c.i.f. Coast ports, 2.25c. is still being named, and some business is understood to have been taken during the week at that figure. In blue annealed sheets, mills asking 2.40c., base Pittsburgh, are understood to have indicated their willingness to meet competitive quotations on desirable tonnages. The sheet market, however, is very quiet.

Pig Iron.—The Southern Pacific Co., San Francisco, will close bids July 6 on 500 tons of foundry iron, sil. 2.75 to 3.25 per cent. This is the only important inquiry known to be up for bids. The foundry business in the San Francisco Bay district is very slow.

*Utah basic	\$26.00 to \$27.00
*Utah foundry, sil. 2.75 to 3.25...	26.00 to 27.00
**English foundry, sil. 2.75 to 3.25..	25.00
**Indian foundry, sil. 2.75 to 3.25..	25.00
**German foundry, sil. 2.75 to 3.25..	23.00 to 23.50
**Dutch foundry, sil. 2.75 to 3.25...	22.50
**Belgium foundry, sil. 2.75 to 3.25..	22.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Lettings for the week total 3275 tons and fresh inquiries call for 1230 tons. The outstanding award of the week, 2500 tons for the Capital Theater in San Francisco, was taken by the United States Steel Products Co. This makes a total of over 18,000 tons of fabricated steel that this company has taken in San Francisco since the first of year. The 506 tons for a bridge over the Pend d'Oreille River near Newport, Idaho, reported a week ago as having been placed with an unnamed fabricator, was awarded to the Virginia Bridge & Iron Co. Eastern mills continue to quote plain material at 2.30c. to 2.35c. c.i.f. Coast ports.

Plates.—While most of the Eastern mills are now asking 2.30c., c.i.f. Coast ports, 2.25c. is still being quoted, and a moderate sized tonnage is understood to have been placed during the week at that price. Buyers generally, however, seem little inclined to test quotations. Aside from an inquiry for about 400 tons for tank material put out by the Southern Pacific Co., nothing of importance has been developed in the way of new business. Bids have closed on 1450 tons for the Lemon Grove & Spring Valley Irrigation District, La Mesa, Cal., but no award has yet been announced.

Bars.—Only one letting of over 100 tons of reinforcing bars is known to have been closed during the week, namely, 800 tons for the Russ Building in San Francisco, which was taken by a local jobber. There is a fairly good sized tonnage pending, but the local carpenters' strike continues to prevent construction work, particularly concrete projects, from going ahead as rapidly as ordinarily would be the case. Reinforcing bar jobbers continue to quote as follows: 2.80c., base per lb. on lots of 250 tons; 2.95c., base on carload lots, and 3.20c., base on less than carload lots.

Cast Iron Pipe.—Seattle, Wash., has placed 250 tons of 6-in. Class C, and 8-in. Classes B and C cast iron pipe with B. Nicoll & Co., and 300 tons with an unknown interest. Tacoma, Wash., has awarded 250

tons of 6, 8 and 18-in. Class B pipe, for street improvements, to B. Nicoll & Co., which is also low bidder on 412 tons required by Los Angeles under Specification 740. South Pasadena, Cal., has awarded 103 tons of 12-in. Class B pipe to the National Cast Iron Pipe Co., and Stockton, Cal., has placed 100 tons of 4 and 6-in. Class B pipe with an unnamed producer. B. Nicoll & Co. has taken 277 tons of 6 and 10-in. Class B pipe for San Diego, Cal., through David H. Ryan, general contractor. Grinnell Co. of the Pacific is low bidder on 293 tons required by Los Angeles under Specification 795-C. Rio Vista, Cal., will close bids July 1 on 108 tons of 6 and 8-in. Class B pipe.

Warehouse Business.—Fresh business is slow in developing and current sales are small. Prices are unchanged.

Steel Pipe.—The Pacific Gas & Electric Co., San Francisco, has placed 500 tons of 5-in. and 8-in. standard line pipe with an Eastern producer. The Pacific Fruit Express Co., San Francisco, is inquiring for 175 tons of 1 to 6-in. special coated standard pipe.

Coke.—A local importer has received a shipment of about 1500 net tons of Continental coke, but is making quotations only on definite inquiries. German by-product coke is quoted at about \$12 to \$12.50 per net ton at incoming dock. Current sales are mostly for small lots.

St. Louis

Purchasing of Pig Iron Continues Brisk— Dealers Bid Up Scrap Prices

ST. LOUIS, June 29.—Users of pig iron in this district continue to display activity in the matter of covering for third and fourth quarter requirements. Recent sales of all descriptions, aggregating approximately 50,000 tons, bring the total on the present movement to above 115,000 tons. The St. Louis Coke & Iron Co. disposed of 40,000 tons, of which 7500 was foundry iron, to a Western manufacturer of heating apparatus. A local steel maker took 5000 tons, and smaller quantities were distributed among virtually all classes of melters in the territory. Inquiry pending totals about 20,000 tons. Under the better demand, prices have firmed up, and offerings by the blast furnaces are not so free as heretofore. Chicago and Birmingham iron are held firmly at \$21, base, while the leading local producer quotes \$22 to \$22.50, f.o.b. Granite City.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$22.66 to \$23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	23.16 to 24.16
Southern fdy., sil. 1.75 to 2.25...	24.42 to 25.42
Granite City iron, sil. 1.75 to 2.25..	22.81 to 23.31

Finished Iron and Steel.—Demand for building materials has picked up to some extent during the past ten days. Standard structural shapes and reinforcing concrete bars are moving in larger volume, and fabricators report numerous small jobs, though nothing involving large tonnage has come out. Specifications on sheets are better than three weeks ago and galvanized material, which was the dull spot, shows slight betterment. Tin plate buying has subsided, most canners having covered their needs, but shipments are heavy, and producers and distributors have good order books.

Coke.—Current demand for metallurgical coke is reported fairly active, and contracting continues in good volume. By-product manufacturers say total volume of contracting for foundry coke to date is ahead of the corresponding period a year ago. Some improvement in demand for domestic coke appears, with both dealers and householders more disposed to stock up than was the case earlier in the month. Shipments of industrial coke are large. Prices hold steady.

Old Material.—Belief in prospective higher prices is growing stronger among dealers and they are bidding up prices at a lively rate. Revisions upward ex-

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes.....	3.80c.
Mild steel bars and small angles.....	3.30c.
Small channels and tees, ¼-in. to 2¼-in..	3.90c.
Spring steel, ¼-in. and thicker.....	6.30c.
No. 28 black sheets.....	4.75c.
No. 10 blue annealed sheets.....	3.75c.
No. 28 galvanized sheets.....	6.00c.
Common wire nails, base per keg.....	\$3.50
Cement coated nails, base per keg.....	3.00

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes.....	3.25c.
Bars, mild steel or iron.....	3.15c.
Cold finished rounds, shafting and screw stock	3.75c.
No. 28 black sheets.....	4.60c.
No. 10 blue annealed sheets.....	3.60c.
No. 28 galvanized sheets.....	5.70c.
Black corrugated sheets.....	4.65c.
Galvanized corrugated sheets.....	5.75c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
	Per Cent Off List
Tank rivets, $\frac{1}{4}$ -in. and smaller.....	.70
Machine bolts .....	.50 and 5
Carriage bolts .....	.47½
Lag screws .....	.55 and 5
Hot-pressed nuts, square, blank or tapped,	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped,	3.75c. off per lb.

tended generally through price lists, the advances ranging from 50c. to \$1.50 per ton. Melters, however, are not following the advance, and aside from casting about for bargains are showing little interest in the market. Railroads are getting very high prices for all they have to sell. Yards are not heavily stocked, but during the past two weeks some material has been laid down. The following railroad lists were before the trade. Big Four, 2300 tons; Northern Pacific, 6200 tons; St. Paul, 10,000 tons; Frisco, 700 tons; Missouri-Kansas-Texas, 300 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton
Iron rails	\$11.00 to \$11.50
Rails for rolling	15.00 to 15.50
Steel rails less than 3 ft.	15.50 to 16.00
Relaying rails, 60 lb. and under..	20.50 to 23.50
Relaying rails, 70 lb. and over...	26.50 to 29.00
Cast iron car wheels	15.50 to 16.00
Heavy melting steel.....	12.50 to 13.00
Heavy shoveling steel.....	12.50 to 13.00
Frogs, switches and guards cut apart	14.00 to 14.50
Railroad springs	16.50 to 17.00
Heavy axle and tire turnings....	9.00 to 9.50
No. 1 locomotive tires	16.00 to 16.50
	Per Net Ton
Steel angle bars.....	12.00 to 12.50
Steel car axles.....	17.25 to 17.75
Iron car axles	20.50 to 21.00
Wrought iron bars and transoms	18.00 to 18.50
No. 1 railroad wrought.....	10.50 to 11.00
No. 2 railroad wrought.....	11.25 to 11.75
Cast iron borings.....	8.75 to 9.25
No. 1 bushelling.....	9.50 to 10.00
No. 1 railroad cast	14.50 to 15.00
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	13.00 to 13.50
Machine shop turnings.....	6.25 to 7.75
Bundled sheets	6.75 to 7.25

Boston

Interest in Pig Iron Growing Because of Prevailing Low Prices

BOSTON, June 29.—Pig iron sales in this territory the past week aggregated several thousand tons. The largest individual order was one of 750 tons of No. 2 plain, last half shipment, for a Massachusetts valve manufacturer, who is negotiating on an equal amount of No. 1X iron. New England foundries are evincing greater interest in iron than for many weeks, but are not specifying tonnages in requisitions for prices, brands, analysis and deliveries. Most of them have sufficient iron to serve several weeks and some for months, but are interested only because of prevailing low prices quoted. Stove makers have announced they will be closed throughout July, thereby materially curtailing New England's consumption of iron for that month. Textile machinery makers are even less active than heretofore. New York State furnaces, a Buffalo steel mill and the Mystic Iron Works still are actively competing for business. One New York State furnace is meeting any price, while another is selling on a delivered basis equivalent to \$19, Buffalo furnace base, or less. It now develops that a Buffalo steel mill recently sold iron at the equivalent of around \$18, furnace, and another New York State furnace at the equivalent of \$17.50, Buffalo base. The Mystic Iron

Works is more actively soliciting large tonnages and is reported to have recently booked 1500 tons of No. 2 plain at less than \$21, furnace.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25....	\$24.15 to \$25.15
East. Penn., sil. 2.25 to 2.75....	24.65 to 25.65
Buffalo, sil. 1.75 to 2.25.....	22.91 to 24.91
Buffalo, sil. 2.25 to 2.75.....	23.41 to 25.41
Virginia, sil. 1.75 to 2.25.....	27.92 to 29.92
Virginia, sil. 2.25 to 2.75.....	28.42 to 30.42
Alabama, sil. 1.75 to 2.25.....	30.60 to 31.60
Alabama, sil. 2.25 to 2.75.....	31.10 to 32.10

Iron and Ore Imports.—No German pig iron has been received at this port so far this month, presumably because of talk of a higher import duty. Last month 1250 tons of this iron was received, and so far this year 8651 tons. India is leading in importations this month with 2404 tons, while 2177 tons of Dutch iron have been received, a total of 4581 tons. Importations of iron ore so far this month have aggregated 23,896 tons, made up as follows: 8100 tons from Bona; 7996 tons from Narvik; and 7800 tons from Bizerta.

Sheets.—While sheet prices are still unsettled, most mill representatives feel the market is on bottom. Blue annealed sheets are generally quoted at 2.30c. per lb., Pittsburgh base, galvanized at 4.30c. and black at 3.10c., but 2.25c. can be done on blue annealed and 4.25c. on galvanized. Stocks of sheets in New England hands are now only fair at best. Current purchases, however, are of a hand to mouth character. Some of the largest buyers intimate they will be in the market shortly.

Cast Iron Pipe.—The Donaldson Iron Works has been awarded 350 tons of 12, 14 and 16-in. pipe by Braintree, Mass.; R. D. Wood & Co., 600 tons of 12-in. by New London, Conn.; and the Warren Foundry & Pipe Co., 200 tons of 6 to 12-in. by Winchendon, Mass. No other municipal lettings are reported, but pipe companies are booking a much larger tonnage on private negotiation. Massachusetts will accept bids until July 8 on large pipe, no definite tonnage being stated in proposals. Middleton, Mass., is in the market for 3000 ft. of 6-in. cement lined pipe. It is reported one of the large gas companies in this district has just bought 2000 tons of gas pipe. Price concessions are still being made on large pipe, but the market for small sizes holds firm. Prices quoted openly are: 4-in., \$60.10 a ton, delivered at common Boston freight rate points; 6 to 12-in., \$55.10 to \$56.10; larger pipe, \$54.10 to \$55.10. The usual \$5 differential is asked on Class A and gas pipe.

Coke.—New England by-product foundry coke producers report specifications against June contracts coming in slowly. Aggregate weekly shipments from ovens, however, are on a par with those for the corresponding period last year. Indications are that the New England Coal & Coke Co. and the Providence Gas Co. will maintain the prevailing price of \$12 a ton, delivered, within a \$3.10 freight rate zone during a part of July at least, although that point has not been definitely settled. Foundries continue to hold back stocking for next winter, presumably due to hopes of a usual summer cut in prices.

Old Material.—The movement of old material out of New England has not increased, and prices quoted

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes.....	3.265c.
Flat, hot rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, square and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	3.95c.
Squares and flats	4.45c.
Toe calk steel	6.00c.

generally in this market remain unchanged. Most brokers have fair sized orders for heavy melting steel, but will not offer more than \$10.50 a ton on cars shipping point. Owners of material are not disposed to sell on that basis, let alone at \$10, the best offers made by some concerns. Rather than have contracts cancelled, \$11 a ton has been paid on a limited tonnage. Activity otherwise appears to center largely in steel turnings, mixed borings and turnings, bundled skeleton and forged material within a range of \$8 to \$8.50 on cars and occasionally at \$8.60. New England foundries apparently have covered on machinery cast requirements, the market having turned dull.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	\$19.50 to \$20.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	17.00 to 18.00
Stove plate	13.00 to 13.50
Railroad malleable	18.50 to 19.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$10.00 to \$11.00
No. 1 railroad wrought	12.00 to 12.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	9.00 to 9.50
Machine shop turnings	8.00 to 8.50
Cast iron borings, chemical	10.00 to 10.50
Cast iron borings, rolling mill	8.00 to 8.50
Blast furnace borings and turnings	8.00 to 8.50
Forged scrap	8.00 to 8.50
Bundled skeleton, long	8.00 to 8.50
Forged flashings	8.00 to 8.50
Bundled cotton ties, long	8.25 to 8.50
Bundled cotton ties, short	8.50 to 9.00
Shafting	15.00 to 15.50
Street car axles	16.50 to 17.50
Rails for rerolling	11.00 to 11.50
Scrap rails	10.00 to 10.50

Buffalo

Inquiry Covers 50,000 Tons of Pig Iron—Competition Strong

BUFFALO, June 29.—Competition is keen for the 50,000 tons of pig iron, more or less, now under inquiry. Included is the Richardson & Boynton 8600 tons of foundry iron just reported as covered. A new inquiry is for 10,000 tons of foundry and another is for 11,000 tons of foundry and malleable iron. The U. S. Radiator Co. is inquiring for 5000 tons, part of which is for its Dunkirk plant. Several inquiries are for one to two thousand tons. One 1000-ton inquiry is for 2X foundry from this district and Westinghouse Electric & Mfg. Co. wants 300 tons for Attica, N. Y. The price of \$20 base is being maintained on business in the district, but this has been cut on Eastern business.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to \$2.25	\$19.00 to \$20.00
No. 2X foundry, sil. 2.25 to 2.75	19.50 to 20.50
No. 1X foundry, sil. 2.75 to 3.25	20.50 to 21.50
Malleable, sil. up to 2.25	20.00
Basic	19.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Small lots of carbon bars are fetching 2.365c., while large lots bring 2.265c. Shapes are being held at the latter price and plates at 2.165c. The sheet situation is a little firmer, with 3.15c. again being named on black. The price on galvanized is 4.25c. Reinforcing bar business is improved, with a 500-ton street sewer pending. A local fabricator has taken 500 tons for a Federal Cement Co. mill. Wire mill operation is around 85 per cent and sheet mill operation around 75 per cent.

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Mild steel bars	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 28 black sheets	4.45c.
No. 10 blue annealed sheets	3.80c.
No. 28 galvanized sheets	5.60c.
Common wire nails, base per keg	\$3.90
Black wire, base per 100 lb.	3.90

Old Material.—No new buying has been going on, but quite a number of purchases have been made of heavy melting steel at Youngstown and Valley points at \$16.50, and these are expected to stimulate buying in this section. One local mill still is offering \$14 for heavy melting steel. Two district consumers are in competition for a limited production of stove plate, demand for which exceeds the supply. There has been a fairly good demand for No. 1 cast scrap at \$16 to \$16.25. Dealers are quite active and are holding up the market throughout. Production has dropped off. New York Central, Michigan Central, Erie and Pennsylvania lists are due this week.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	\$14.50 to \$14.75
Selected No. 1 heavy melting steel	15.50 to 15.75
Low phosphorus	17.50 to 18.00
No. 1 railroad wrought	14.00 to 14.50
Car wheels	17.00 to 17.50
Machine shop turnings	9.50 to 10.00
Mixed borings and turnings	11.50 to 12.00
Cast iron borings	11.50 to 12.00
No. 1 busheling	14.50 to 14.75
Stove plate	15.00
Grate bars	13.00 to 13.50
Hand-bundled sheets	10.00 to 10.50
Hydraulic compressed	14.50 to 14.75
No. 1 machinery cast	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings	12.75 to 13.25

Birmingham

Fifty Per Cent of Third Quarter Foundry Pig Iron Needs Covered

BIRMINGHAM, June 29.—While the larger consumers of pig iron have not purchased against their full estimated needs during the next three months, it is admitted by furnace interests that a considerable portion of the probable make during the third quarter has been sold, and there will be warrant for steady production of foundry iron. Large buyers look for concessions on the \$21 per ton base for No. 2 foundry. Inquiries have appeared for last half iron. Fourteen blast furnaces are still active on foundry iron. One less furnace, now nine, are making basic, a mishap at one of the Bessemer furnaces of the Tennessee Coal, Iron & Railroad Co. requiring some repairing. One furnace is on ferromanganese, making 24 in all in operation. Work on three furnaces being constructed and two under repair and relining is being pushed. The Sloss-Sheffield Steel & Iron Co. will be able to blow in its relined No. 4 furnace at North Birmingham, by July 15. Consideration is being given to the construction of added capacity by one of the cast iron pipe companies, whose production of pipe is over 400 tons daily. Fifty per cent of the probable make of foundry iron during the third quarter has been sold.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	\$21.00 to \$22.00
No. 1 foundry, 2.25 to 2.75 sil.	21.50 to 22.50
Basic	21.00 to 22.00
Charcoal, warm blast	30.00

Rolled Steel.—Several of the finishing mills and fabricating shops in this district are operating to capacity. The open-hearth furnace operation is practically to capacity. Sheets are being well taken by smaller industries of the district. The new cotton tie mill of the Tennessee Coal, Iron & Railroad Co. being installed at the Bessemer rolling mills will be producing within the next 40 days, in time to take some of this season's business. Steel bars are quoted at 2.10c. to 2.20c.; tank plates, 2.05c. to 2.15c. and structural, 2.15c. to 2.25c.

Cast Iron Pipe.—Production and shipment continue strong. Lettings are not so frequent and not large. However, business on hand will warrant steady operation of shops indefinitely, with further business assured. Quotations are still at \$40 for 6-in. pipe and larger. No hesitation is looked for in cast iron pipe during third quarter.

Coke.—By-product coke ovens are operating at capacity and demand in home territory and elsewhere is absorbing all output of independent producers. The Semet-Solvay by-product plant at Ensley is supplying the United States Cast Iron Pipe & Foundry Co., the latter closing down its bee-hive ovens, and is installing screening apparatus to produce sizable coke for shipment north. Few bee-hive ovens are in operation now, less than 85. Quotations are being held firmly at minimum of \$5.50 with sales in small lots still being consummated at \$6 per net ton at ovens.

Old Material.—Lower prices have brought but little stimulation in the market and only small tonnage new business is being placed. Heavy melting steel at \$12 did not attract any great amount of business. Not much is doing in No. 1 cast. Dealers are still owing consumers much old material.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel	12.00 to 13.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	17.00 to 18.00
Steel rails	13.00 to 14.00
No. 1 cast	16.50 to 17.00
Tramcar wheels	16.00 to 17.00
Car wheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings.....	7.50 to 8.00
Cast iron borings	7.50 to 8.00
Rails for rolling	15.00 to 16.00

Cincinnati

Heavy Steel Bookings in June—Pig Iron Still Active—Scrap Higher

CINCINNATI, June 29.—While the pig iron buying movement has begun to wane, there still is considerable selling activity in the local market. Bookings in the past week approximated 15,000 tons, the majority of which consisted of lots ranging from 100 to 500 tons. Southern Ohio furnaces, having sold large quantities of iron during the last two weeks are quoting \$19.50, base Ironton, on foundry grades, and claim that they will not accept business under that figure. A nearby steel plant, which bought about 100,000 tons of basic iron recently, is reported to have placed some of the tonnage with an Ironton producer. It is understood that the price paid for last quarter delivery was \$19.50 to \$20, delivered. Alabama iron is available at \$20.50 to \$21, base Birmingham, but it is believed that an attractive inquiry would bring out lower quotations. The only active producer in Tennessee has a full order book for the third quarter and temporarily has retired from the market. Several 100-ton lots of Jackson County silvery iron have been sold at the regular schedule of \$27.50 for 8 per cent. An Indianapolis melter has closed for 1800 tons of foundry iron and a consumer

up State has taken 1100 tons. The Louisville & Nashville Railroad has purchased 700 tons of foundry and charcoal iron from Southern furnaces. Inquiries are negligible, and local dealers anticipate a considerable decrease in sales in the immediate future.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25	
(base)	\$24.19 to \$24.69
Alabama fdy., sil. 2.25 to 2.75.....	24.69 to 25.19
Tennessee fdy., sil. 1.75 to 2.25..	24.69
Southern Ohio silvery, 8 per cent ..	30.39
So. Ohio fdy., sil. 1.75 to 2.25.....	20.89 to 21.39
So. Ohio malleable	20.39 to 21.89

Finished Material.—Orders and specifications in June totaled a fairly satisfactory tonnage in the aggregate. Two local selling offices report that bookings were the heaviest this year, but others have not experienced a corresponding upturn. Consumers have little stock on hand but are not inclined to anticipate future needs to any marked extent. However, there has been a noticeable tendency on the part of at least a few buyers to place orders for delivery 60 days hence. Much of the increased tonnage taken by certain producers is attributed to the desire of purchasers to cover their needs before the recently announced advance on structural steel and bars becomes effective. Considerable doubt as to the ability of sellers to sustain their new schedules has been expressed throughout the trade. While the sheet market shows no signs of gaining strength, no further recession in prices has taken place. Mills are quoting 3.05c. to 3.10c., base Pittsburgh, on black sheets. There have been isolated cases in which lower quotations have appeared, but they scarcely are representative of the market. Galvanized sheets are bringing 4.20c. to 4.25c., base Pittsburgh, but the demand is light. Producers are holding to 2.30c., base Pittsburgh, for blue annealed. Automobile body sheets remain at 4.20c., base Pittsburgh. Fabricators have been active purchasers of material in the past week. Structural shapes are quoted at 2c., base Pittsburgh, and tank plates at 1.90c., base. Bars are moving at a moderate rate at 2c., base Pittsburgh. The wire goods market is quiet. Common wire nails are selling at \$2.65 per keg, base Ironton or Pittsburgh, and plain wire at \$2.50 per 100 lb., base Ironton or Pittsburgh. Fabricators are figuring on a large number of attractive jobs.

The Big Four Railroad will take bids until July 7 on steel locomotive and car axles, steel tubes and safe ends, common wire nails, woven wire fence and galvanized barbed wire for its third quarter's requirements. This carrier is expected to purchase 1100 tons of plates.

Reinforcing Bars.—The Danis-Hunt Co., Dayton, Ohio, has been awarded the general contract for the laboratory building at Wright Flying Field, Dayton, which calls for approximately 500 tons of bars. No new projects of importance have appeared in the past week. New billet bars continue to be quoted at 2c., Cleveland, and new billet bars at 1.90c., mill.

Warehouse Business.—The volume of business in June exceeded that in May by 10 per cent. Weakness in sheets has been offset by the increased movement of structural steel and bars. Pipe also is in better demand. Prices are steady and unchanged.

Coke.—The leading seller in this territory has reduced by-product foundry coke 50c. a ton, effective July 1. The new schedule calls for \$7.50 per net ton at ovens, or \$9.64 delivered Cincinnati. Domestic grades will remain unchanged with egg and walnut bringing \$7.14, delivered, and No. 2 nut \$6.64. Shipments of by-product foundry coke in June were less than those in May, but the movement of domestic by-product showed a gain. Local dealers in both beehive and by-product coke have closed a number of contracts covering consumers' needs during the last half of the year.

Old Material.—A further increase of 50c. a ton on heavy melting steel is the feature of the local market. Many other items also have advanced in the past week. However, the mill situation is not encouraging. A Portsmouth, Ohio, steel plant will shut down during the

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes....	3.40c.
Bars, mild steel or iron.....	3.30c.
Reinforcing bars	3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.00c.
No. 28 black sheets	4.10c. to 4.30c.
No. 10 blue annealed sheets.....	3.60c.
No. 28 galvanized sheets	5.25c. to 5.40c.
Structural rivets	3.75c.
Small rivets .....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base per 100-lb. keg.	3.15
Chain, per 100 lb.....	7.55
	Net per 100 Ft.
Lap welded steel boiler tubes, 2-in.....	\$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.	39.00

first three weeks in July, thereby making it necessary to hold up scrap shipments. Other mills are operating only on a limited scale.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton		
Heavy melting steel.....	\$12.50 to	\$13.00
Scrap rails for melting.....	12.50 to	13.00
Short rails.....	17.50 to	18.00
Relaying rails.....	27.00 to	27.50
Rails for rolling.....	14.00 to	14.50
Old car wheels.....	13.00 to	13.50
No. 1 locomotive tires.....	17.00 to	17.50
Railroad malleable.....	15.50 to	16.00
Agricultural malleable.....	14.50 to	15.00
Loose sheet clippings.....	7.00 to	7.50
Champion bundled sheets.....	9.00 to	9.50
Per Net Ton		
Cast iron borings.....	7.00 to	7.50
Machine shop turnings.....	6.50 to	7.00
No. 1 machinery cast.....	17.00 to	18.00
No. 1 railroad cast.....	14.50 to	15.00
Iron axles.....	20.00 to	20.50
No. 1 railroad wrought.....	9.00 to	9.50
Pipes and flues.....	8.00 to	8.50
No. 1 busheling.....	9.50 to	10.00
Mixed busheling.....	7.00 to	7.50
Burnt cast.....	7.50 to	8.00
Stove plate.....	9.00 to	9.50
Brake shoes.....	9.50 to	10.00

FABRICATED STEEL

Another Week of Fairly Large Awards, With Total of 32,000 Tons—22,000 Tons Pending

Structural steel awards in the past week totaled more than 32,000 tons, a fairly high aggregate for this time of year. Included in the awards were several jobs of good size—6800 tons for a power plant in New York, 3000 tons for New York subway work, 3000 tons for a Medical Arts building in Chicago and 2500 tons for a theater in San Francisco. Among the jobs pending, totaling upward of 22,000 tons, the largest is 3000 tons for a Chicago office building. Awards follow:

BOSTON, 1800 tons, Keith Memorial Theater, to New England Structural Co.

PITTSFIELD, MASS., 400 tons, building for Berkshire Life Insurance Co., to American Bridge Co.

NEW YORK, 1231 tons, office building at 7, 9 and 11 East Forty-fourth Street, to Bethlehem Fabricators.

NEW YORK, 500 tons, apartment building, 312-316 West 106th Street, to Bethlehem Fabricators.

NEW YORK, 1000 tons, apartment building, 1112 Park Avenue, to Bethlehem Fabricators.

NEW YORK, 594 tons, office building, 160-162 East Fifty-sixth Street, to Lehigh Structural Steel Co.

NEW YORK, tonnage not given, Professional Building, 2021 Grand Concourse, to Taylor-Fletcher Steel Construction Co.

NEW YORK, 869 tons, church, school, rectory and convent of Our Lady of Pompei, Leroy and Carmen Streets, to Hinkle Iron Works.

NEW YORK, 6800 tons, power plant for New York Steam Corporation at First Avenue and Thirty-fifth Street, to Post & McCord.

NEW YORK, 100 tons, addition to Altman department store, to Eidlitz & Ross.

NEW YORK, 3000 tons, subway route 8, section 6, Brooklyn, to American Bridge Co.

BROOKLYN, 200 tons, bank at 205 Fifth Avenue, to Joseph Gaydica Iron Works.

LONG ISLAND CITY, N. Y., 450 tons, garage for R. H. Macy Co., to Belmont Iron Works.

CORONA, L. I., 225 tons, motion picture theater, to National Bridge Co.

RIDGEWOOD, L. I., 286 tons, sheds and storage for O'Neill Pipe & Supply Co., to American Bridge Co.

SCARSDALE, N. Y., 835 tons, apartment building on Bronx Parkway, to Oltner Iron Works.

PHILADELPHIA, 250 tons, warehouse for Curtis Publishing Co., to American Bridge Co.

ATLANTIC CITY, 450 tons, transmission towers for Atlantic City Electric Co., to American Bridge Co.

SCRANTON, PA., 400 tons, transmission towers for Scranton Electric Co., to American Bridge Co.

PITTSBURGH, 1575 tons, 10 coal barges, for Hillman Transportation Co., to American Bridge Co.

SCOTSDALE, PA., 135 tons, building for the United States Cast Iron Pipe & Foundry Co., to Massillon Bridge & Structural Co.

LOUISVILLE & NASHVILLE RAILROAD, 1800 tons, two bridges to American Bridge Co.

SPRINGFIELD, OHIO, Springfield Malleable Iron Co., foundry building, tonnage unstated, to Bellefontaine Bridge & Steel Co.

CLEVELAND, 500 tons, Board of Education, three schools, to Cleveland Structural Steel Co.

CALCITE, MICH., 250 tons, repair shop for Michigan Limestone & Chemical Co., to Illinois Steel Warehouse Co.

CHICAGO, 3000 tons, Medical Arts, to McClintic-Marshall Co.

CHICAGO, 200 tons, Fish Furniture Co., building, to Wend-nagel & Co.

CHICAGO, 1200 tons, apartment building, 1400 Lake Shore Drive, to Hansell-Elcock Co.

TWO RIVERS, WIS., 220 tons, factory for Hamilton Mfg. Co., to American Bridge Co.

MINNEAPOLIS, 950 tons, bridge, to Minneapolis Steel & Machinery Co.

SIoux COUNTY, IOWA, 119 tons, bridges, divided between Pittsburgh-Des Moines Steel Co. and Des Moines Steel Co.

GREELEY, COLO., 130 tons, gymnasium for State Teachers' College, to E. Burkhardt & Sons Steel & Iron Works.

BOETTCHER, COLO., 110 tons, boiler room and bins for cement plant, Colorado Portland Cement Co., to E. Burkhardt & Sons Steel & Iron Works.

SAN FRANCISCO, 2500 tons, Capital Theater, to United States Steel Products Co.

SAN FRANCISCO, 120 tons, club house, Golden Gate Park, to Dyer Brothers.

MELLONES DAM, CAL., 100 tons, penstocks for the Pacific Gas & Electric Co., Pitt River project at Mellones Dam, to Western Pipe & Steel Co.

SEATTLE, WASH., 330 tons, unstated job, to Wallace Equipment Co.

SNAKE RIVER, ORE., 325 tons, bridge, to Virginia Bridge & Iron Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

PROVIDENCE, R. I., 1000 tons, athletic building for Brown University.

PENNSYLVANIA RAILROAD, 1500 tons, bridges.

KNOXVILLE, TENN., 600 tons, hotel.

NEW YORK CENTRAL, 300 tons, bridge repairs.

HAVRE DE GRACE, MD., 2000 tons, gates for Conowingo dam to be built for Susquehanna Power Co.

READING RAILROAD, 300 tons, bridges.

POUGHKEEPSIE, N. Y., 800 tons, Hudson River Bridge.

DETROIT, 500 tons, Detroit Edison Co., McKinstry Street substation; bids taken.

DAYTON, OHIO, 1500 tons, experimental station at Wilbur Wright Flying Field, general contract for laboratory building to Danis Hunt Construction Co., Dayton; administration building, to E. H. Latham Co., Columbus.

CHICAGO, 3000 tons, Mather Building.

CHICAGO, 1800 tons, building at Franklin and Adams Streets.

CHICAGO, 800 tons, theater on South Side.

CHICAGO, 5000 tons, Pittsfield building for Marshall Field estate, Washington Street and Wabash Avenue; Graham, Anderson, Probs & White, architects.

ST. LOUIS, 1600 tons, transformer plant.

AMERICAN FALLS, IDAHO, 305 tons, bridge over American Falls dam; bids opened June 28 at the office of the United States Bureau of Reclamation at American Falls.

SAN FRANCISCO, 250 tons, apartment building on Vallejo Street.

SAN FRANCISCO, 400 tons, plates for tank work for Southern Pacific Co.

RICHMOND, CAL., 300 tons, building for Standard Mfg. Co.

SACRAMENTO, CAL., 375 tons, grade crossing under the Southern Pacific and the South San Francisco Belt Line tracks near San Mateo; bids to be opened July 9 by the California Highway Commission at Sacramento.

German-American Bounty Inquiry

Two Governments to Form Joint Commission—Countervailing Duty on Imports Would Apply After Date of Its Completion

WASHINGTON, June 29.—Accepting a proposal of the German Government made through the embassy in Washington, the United States Government has agreed to the setting up of a joint commission to investigate the question as to whether or not imports of iron and steel from Germany are the subject of bounties. The German Government contends that none of the products listed in the recent Treasury decision as being subsidized through the Raw Steel Syndicate is granted a bounty. It was by reason of this representation to the State Department that the German embassy succeeded in having the Treasury Department suspend its order, effective June 20, imposing countervailing duties. It is understood that, should the United States Government, after the investigation is made, still contend that imports from Germany are subsidized, the countervailing duties would be applicable from the time of liquidation of entries after the inquiry had been completed.

The Treasury Department has made it known that its suspension order must not be interpreted as meaning that it has conceded the accuracy of the representations of the German Government. At the same time it has acceded to the request of the German Government for an investigation as being entirely reasonable and fair. The position of the German Government is that no bonus is paid on the export of pig iron, ingots or rolling mill products manufactured in Germany. The contention is rather that where bonuses are paid they are granted on remanufactured or completed material, such as engines, and many other lines which it is understood will be given study by the joint commission.

Investigation Expected to Take Long Time

The commission will be made up of two American and two German Government representatives. The American representatives likely will consist of an agent from the American embassy in Berlin, chosen by the State Department, and a Treasury agent, perhaps from the London office. The German agents will consist of one each from the Ministry of Economics (Department of Commerce) and the Foreign Office. As far as known, access will be given the commission to the records of the German manufacturers. The commission is to report to the American and German Governments. In the event of disagreement a dissenting report will be made. Apparently it is the thought of the German Government that, because of what it claims is an intricate study, a long time will be required to conduct the investigation and make the report. It was said at the Treasury Department that the American agents will be selected soon.

The turn of the case gives the impression that the German Government has taken the burden of proving its case and is prepared to go into the question exhaustively in an effort to support its claim of no bounties on pig iron, ingots and rolling mill products, together with its contention that the Treasury Department has misunderstood the so-called Raw Steel Syndicate agreement. The German Government presents the argument that the published figures which this Government construed as being the amounts of bounties are only items showing the differences in costs of production in Germany and the world costs, or costs in other European countries, and that where bounties are paid these figures act as a guide to producers of the so-called basic products as the amounts that should be allowed consumers who turn the products into their ultimate and finished form.

German Reasons for the Raw Steel Syndicate

The purpose of the Raw Steel Syndicate, it is stated, is not to stimulate export of its own products, because it is stated that these producers not only make but export their own material and therefore could not reasonably subsidize themselves. It is stated that even where bounties are paid on the finished product they

apply to only a small portion of total exports of iron and steel products.

In the German view the Raw Steel Syndicate is maintained for three primary objects:

First: To counteract alleged dumping into the German market of French and Belgian iron and steel products for use in further manufacture. This, it is held, is necessary to offset the effect of the depreciated French and Belgian franc. Since adoption of the Dawes reparation plan and establishment of the German fiscal policy on a gold basis, costs in Germany are said to be much higher than before. Also the protective tariff policy of the German Government, it is contended, is counteracted in part by the bounties because they afford protection to German remanufacturers using German iron and steel as against German users of foreign iron and steel.

Second: To meet problems arising from steel mergers that have developed and are developing in the German industry. It is necessary, it is maintained, to learn how economically different units of consolidated companies are operated. For instance, it has been pointed out, one finishing plant is near a port of shipment while another plant, producing the basic or so-called raw material, is inland; or a second finishing plant is situated in the interior, and the high-cost plant is assisted through the low-cost plant. This is a matter of bookkeeping.

Third: It is intended to meet the tax system and to equalize costs. In this respect, comparison has been made with the so-called, though not real, minimum guarantee clause of the transportation act by which American railroads are allowed a net revenue. One of the lines of a large railroad company may earn large profits, but it is allowed to distribute them to the weaker lines and to equalize the net. This, it is stated, applies in the way of bounties among finished units in iron and steel, but does not pertain to the so-called basic products themselves.

Should it develop that the bounty system does not pertain to the iron and steel products listed in the Treasury decision, it is believed that efforts will be increased by American manufacturers to get an anti-dumping order against German products which, it is claimed, are sold in this country at less than the domestic market price.

Warwick Furnace Equipment Ordered Sold

The United States District Court in Philadelphia has ordered the sale at public auction of materials and equipment used at the Warwick blast furnaces at Pottstown, Pa. Application for the sale was made by Edward L. Herndon, receiver for the Eastern Steel Co., which until recently operated the furnaces under lease. The furnaces have reverted to the Warwick Iron & Steel Co., the owner, and the property to be sold is merely repair parts and other supplies and machinery and equipment, which is valued at upward of \$100,000.

Old Material Active at Higher Prices at Detroit

DETROIT, June 29.—There has been more activity in the market on old material in this district during the past two weeks, with the expected result that prices are higher. Buying by the mills is shown in increased shipments, and a larger number of bidders is noted for the offerings of the largest producers in the district for July.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate. No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$13.25 to \$13.75
Borings and short turnings	9.00 to 9.50
Long turnings	7.75 to 8.25
No. 1 machinery cast	17.00 to 18.00
Automobile cast	21.50 to 22.50
Hydraulic compressed	11.00 to 11.50
Stove plate	13.50 to 14.50
No. 1 bushing	11.25 to 11.75
Sheet clippings	7.00 to 7.50
Flashings	10.25 to 10.75

OBITUARY

EARL W. OGLEBAY, a brief sketch of whose life appeared in connection with an announcement in our last issue of his death in Cleveland on June 22, was identified with the Lake Superior iron ore industry from its early days. Mr. Oglebay shipped the first cargo of ore from the Mesabi district in 1892. This came from the Mountain iron mine, which was one of the several mines developed by the John D. Rockefeller interests in the Mesabi district. The Rockefeller mines, known as the Lake Superior Consolidated Ore Mines, were operated by Mr. Oglebay until they were taken over by the United States Steel Corporation under the name of the Oliver Mining Co. A few years after his birth, which was in Bridgeport, Ohio, in



EARL W. OGLEBAY

1849, Mr. Oglebay's parents moved across the Ohio River to Wheeling, W. Va. He was graduated from Bethany College, Bethany, W. Va., in 1871 and was employed for a time in a wholesale grocery store owned by his father. Later he became a clerk in the National Bank of West Virginia at Wheeling and in 1877, at the age of 28, became president of that bank, which position he retained until his death. His first connection with the iron and steel industry was through an interest he acquired in the Riverside Iron Works, Wheeling, now the Riverside Works of the National Tube Co. This affiliation caused him to become interested in the source of raw material, iron ore. He made a trip to the Lake Superior district and acquired an interest in the Montreal mine in the Gogebic Range. Then he went to Cleveland to engage in the mining and merchandising of iron ore and became associated with Tuttle, Masters & Co., which later became Tuttle, Oglebay & Co., and still later Oglebay & Co. As head of this firm he had charge of the operation of mines, selling the ore and financing the transactions. To relieve himself of the financing work, he took into the firm David Z. Norton, then a cashier in a Cleveland bank. Mr. Norton was made a partner, the firm in 1890 becoming Oglebay, Norton & Co., and it remained a partnership until it was reorganized as an incorporated company in 1924. At that time Mr. Oglebay gave up active connection with the company and was succeeded as president by a nephew, Crispin Oglebay. Mr. Oglebay was an officer and director of various iron mining, manufacturing and vessel companies and banks. He became vice-president of the Montreal Mining Co. at its organization in 1894 and was made president of this company upon the decease of J. H. Wade a few months ago. He was president and director of the Bristol Mining Co., a director and member of the executive committee of the Republic Iron & Steel Co., and a director of the Wheeling Steel Corporation, president of the Commonwealth Iron Co., organizer and director of the Ferro Machine & Foundry Co., Cleveland, vice-president and director of the Kelley Island Lime & Transport Co., and chairman of the Trust Committee of the Central National Bank, Cleveland. He was a trustee of Bethany College, of Lakeside Hospital at Cleveland, the Cleveland Art Museum, and Western Reserve University, Cleveland. He was Federal food commissioner for West Virginia during the war and for 15 years had been a member of the State Board of Education of West Virginia. He retired from active business

several years ago and had recently spent the greater part of his time in his West Virginia home. His philanthropies were numerous. For many years he had been greatly interested in agriculture and the advancement of scientific farming, and in carrying on this work he established Waddington Farm, 1200 acres just outside of Wheeling. The State University of West Virginia named its agricultural building at Morgantown "Oglebay Hall" in consideration of his service to agriculture in West Virginia. Mr. Oglebay built and endowed for Bethany College "Oglebay Hall of Agriculture", and, in addition, donated 700 acres of land with buildings to that college. In 1915 he was chosen by the West Virginia Panama-Pacific Exposition Committee as the "most useful citizen in West Virginia."

E. M. ZEHNDER, president Scranton Bolt & Nut Co., Scranton, Pa., died on June 21, at the age of 60 years. Mr. Zehnder was identified with the iron and steel industry for 35 years. He started in the rolling mill department of the Montour Rolling Mills, Danville, Pa., in 1891, going from there to the Pennsylvania Bolt & Nut Co., Lebanon, Pa., where he acted as superintendent of the mills. He went to Scranton in 1899 with his brother, the late W. D. Zehnder, establishing the Scranton Bolt & Nut Co., and succeeded his brother as president in 1906. He was president also of the Rome Iron Mills, Rome, N. Y., and was vice-president of the Railway Business Men's Association. He was considered an authority on the manufacture of bar iron. He was a member of the Engineers' Club and the Railroad Club, New York, and of the American Iron and Steel Institute.



E. M. ZEHNDER

GEORGE A. BAUER, vice-president W. E. Shipley Machinery Co., 1421 Chestnut Street, Philadelphia, died at his home in Jenkintown, Pa., on June 22, following an illness of four weeks. He was born in 1871, at Hamburg, N. Y. As a young man he associated himself with E. A. Kinsey Co., Cincinnati. After serving several years with this company he went with the Harris Automatic Press Co., Cleveland, and from this organization, 25 years ago, to the W. E. Shipley Machinery Co. He always maintained a personal contact in the field. In 1908 Mr. Bauer became vice-president of the company, which office he held until his death. His son, G. Frederic Bauer, is associated with W. E. Shipley Machinery Co.



GEORGE A. BAUER

HOWARD BURR FRECK, general traffic manager of the Acme Steel Co., Chicago, and well known in transportation circles, died June 21 at his home in Western Springs, Ill. He had been ill only a few days with pneumonia. He was treasurer of the Chicago Shippers' Conference Association and a member of the Chicago Traffic Club.

NON-FERROUS METAL MARKETS

The
Week's
Prices

Cents per Pound
for
Early Delivery

	June 23	June 24	June 25	June 26	June 28	June 29
Lake copper, New York.....	14.00	14.00	14.00	14.00	14.00	14.00
Electrolytic copper, N. Y.*..	13.67 1/2	13.65	13.65	13.62 1/2	13.62 1/2	13.62 1/2
Straits tin, spot, New York..	62.12 1/2	61.62 1/2	61.87 1/2	...	61.37 1/2	61.62 1/2
Lead, New York.....	8.30	8.30	8.25	8.25	8.25	8.25
Lead, St. Louis.....	8.10	8.10	8.00	8.00	8.00	8.00
Zinc, New York.....	7.52 1/2	7.55	7.55	7.52 1/2	7.50	7.52 1/2
Zinc, St. Louis.....	7.17 1/2	7.20	7.20	7.17 1/2	7.15	7.17 1/2

*Refinery quotation; delivered price 1/4 c. higher.

NEW YORK, June 29.—None of the markets is particularly active. Prices of copper are sagging in a listless market. Tin has been moderately active and both lead and zinc have been steady and quiet.

Copper.—Although quite a number of producers are still adhering to a quotation of 14c., delivered, for electrolytic copper, it appears that very little metal was sold as high as that during the recent fairly large buying movement. Prices paid reached 13.95c., delivered, but in the last week the little business that has been done has been satisfied at gradually receding values until today the demand is being filled at 13.87 1/2 c., delivered, which we quote as the market. Consumers, being pretty well covered, are not showing much interest, nor are dealers because of the small margin of possible profit. The rumor today that the British coal strike will probably be settled has been the cause of a little better tone and some improvement in inquiry. It is understood that the Copper Export Trading Corporation will not become active until late in the summer. Lake copper is quoted at 14c., delivered.

Tin.—With business confined almost entirely to that between dealers, sales of about 1200 tons were consummated last week. Consumers show no interest and are apparently well covered and their absence from the market is its principal unsatisfactory feature. Thursday, June 24, was the day on which the most business was done last week, one dealer at the close of the day absorbing about 400 tons. Yesterday and today the market has been quiet with spot Straits tin quoted today

at 61.62 1/2 c., New York. Arrivals thus far this month have been 7130 tons with 6435 tons reported afloat.

Lead.—The market is quieter and premiums in the outside market have practically disappeared. It seems apparent that the leading interest is taking business at its contract price of 8.25c., New York, and making shipments at once. Previous to this it was understood it was booking July orders at the July average price. Quotations in the outside market have gradually settled to 8c., St. Louis.

Zinc.—There has been scarcely any activity on the part of any consumers or dealers in the past week and prices have ranged between 7.15c. and 7.20c., St. Louis. Galvanizers evidently have metal still to buy for July, but they do not appear to be anxious. Today 7.20c., St. Louis, is asked, but the market is quotable at 7.17 1/2 c., St. Louis, or 7.52 1/2 c., New York.

Nickel.—Ingot nickel in wholesale lots is quoted at 35c. and shot nickel at 36c., with electrolytic nickel obtainable at 39c. per lb.

Antimony.—Chinese metal for spot delivery is stronger in a rather quiet market at 13.50c. to 13.75c., New York, duty paid. Future shipments from China are quoted at 12.25c. to 12.50c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c. per lb., delivered.

CHICAGO, June 29.—In an inactive market tin and antimony have advanced and lead and zinc have declined. Tin has been erratic, and in view of the small amount of business that has been transacted, it is hard to account for its rise. The recession in lead is regarded as a reaction from an advance which was too rapid. Zinc is weak in sympathy with lead. Among the old metals brass, pewter and aluminum have declined. Prices on rolled metals from Chicago warehouse are unchanged. We quote, in carload lots, Lake copper, 14.12 1/2 c.; tin, 63c.; lead, 8.20c.; zinc, 7.30c.;

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	63.00c. to 64.00c.
Tin, bar.....	66.00c. to 67.00c.
Copper, Lake.....	15.25c.
Copper, electrolytic.....	15.00c.
Copper, casting.....	14.75c.
Zinc, slab.....	8.00c. to 8.50c.
Lead, American pig.....	8.75c. to 9.25c.
Lead, bar.....	11.00c. to 12.00c.
Antimony, Asiatic.....	12.00c. to 13.00c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	30.00c. to 30.50c.
Babbitt metal, commercial grade.....	30.00c. to 35.00c.
Solder, 1/2 and 1/2 guaranteed.....	39.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	68.00c.
Tin, bar.....	70.00c.
Copper, Lake.....	15.00c.
Copper, electrolytic.....	15.00c.
Copper, casting.....	14.00c.
Zinc, slab.....	8.40c.
Lead, American pig.....	9.00c.
Antimony, Asiatic.....	16.50c.
Lead, bar.....	11.00c.
Babbitt metal, medium grade.....	22.00c.
Babbitt metal, high grade.....	72.50c.
Solder, 50-50.....	40.75c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass.....	18 3/4 c. to 19 1/4 c.
Copper, hot rolled.....	22 1/2 c. to 23 1/2 c.
Copper, cold rolled, 14 oz. and heavier.....	24 3/4 c. to 25 1/4 c.
Seamless Tubes—	
Brass.....	23 1/4 c. to 24 1/4 c.
Copper.....	24 1/4 c. to 25 1/4 c.
Brass Tubes.....	26 1/4 c. to 27 1/4 c.
Brass Rods.....	16 1/4 c. to 17 1/4 c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), oaks.....	12.75c.
Zinc sheets, open.....	13.25c.

Non-Ferrous Rolled Products

Mill prices in brass, bronze and copper products are unchanged. Lead full sheets were advanced June 17 1/2 c. to 3/4 c. per lb., as stated last week.

List Prices Per Lb. f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass.....	18.87 1/2 c.
Copper, hot rolled.....	22.50c.
Zinc.....	11.25c.
Lead (full sheets).....	12.00c. to 12.25c.

Seamless Tubes—	
High brass.....	23.50c.
Copper.....	24.25c.

Rods—	
High brass.....	16.62 1/2 c.
Naval brass.....	19.37 1/2 c.

Wire—	
Copper.....	15.87 1/2 c.
High brass.....	19.37 1/2 c.
Copper in Rolls.....	21.37 1/2 c.
Brass Tubing.....	26.87 1/2 c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide.....	37.50c.
Tubes, base.....	48.00c.
Machine rods.....	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse
(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	18 3/4 c. to 19 3/4 c.
Copper, hot rolled	22 1/2 c.
Copper, cold rolled, 14 oz. and heavier	24 1/2 c.
Zinc	12.00c.
Lead, wide	11.08c.
Seamless Tubes—	
Brass	23 1/2 c. to 25c.
Copper	24 1/2 c. to 25 1/2 c.
Brazed Brass Tubes	26 3/4 c. to 29 1/2 c.
Brass Rods	16 3/4 c.

Old Metals, Per Lb., New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.75c.	13.25c.
Copper, heavy and wire	11.25c.	12.25c.
Copper, light and bottoms	9.75c.	11.00c.
Brass, heavy	7.25c.	8.75c.
Brass, light	6.25c.	7.75c.
Heavy machine composition	8.75c.	10.00c.
No. 1 yellow brass turnings	8.25c.	9.00c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	7.25c.	7.50c.
Lead, tea	5.50c.	6.25c.
Zinc	4.25c.	4.75c.
Sheet aluminum	17.00c.	19.00c.
Cast aluminum	17.00c.	19.00c.

in less than carload lots, antimony, 15c. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.50c.; red brass, 9c.; yellow brass, 7.75c.; lead pipe, 7c.; zinc, 5c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 17.75c., all being dealers' prices for less than carload lots.

Chicago Iron and Steel Market

(Concluded from page 39)

cago, is the ruling price, and little tonnage has been placed at higher than that figure. Bar iron mills are receiving somewhat heavier specifications, and, although still on single turn, have increased production. While demand for iron has been light compared with that for soft steel, producers are holding prices at 2c., Chicago. Rail steel bars are still steady at 2c., Chicago, for delivery in this immediate territory, but at outlying points, where the competition of mills of other districts is encountered, as low as 1.90c., Chicago, has been quoted. Mill operations show little change, although one plant at Chicago Heights contemplates shutting down over the holiday.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c., base, Chicago.

Reinforcing Bars.—Warehouse orders are running about equal to May and are no heavier than a year ago at this time. The price of billet steel bars lacks strength and reports of shading are current throughout the trade. Large tonnages are not bringing more than 2.50c. warehouse and on small lots 2.60c. is difficult to obtain. Fresh inquiry and contracts recently closed are shown on page 31.

To Make Large Additions to Steel Corporation Coke Plants

Extensions to the by-product coke plants of the Steel Corporation at Clairton, Pa., and Fairfield, Ala., have been announced. At Clairton the present plant, comprising 1134 ovens, will be enlarged by the addition of four batteries of 87 ovens each, increasing the coal carbonizing capacity by 3,467,500 tons annually and the coke yield by 2,427,250 tons. The new ovens are to be Koppers-Becker type.

A battery of 63 ovens of the same type will be built at Fairfield, where there are at present 434 Koppers ovens.

Machinery Exports Decline

(Concluded from page 14)

valued at \$694,191, while for the 11 months ended with May the value was \$7,942,421. Shipments of sewing machines to Mexico in May numbered 3799, with a value of \$142,682, while for the 11 months Mexico took 38,017, with a value of \$1,244,631. Sewing machines shipped to Colombia in May numbered 4613, with a value of \$117,608, while for the 11 months the number was 25,097, with a value of \$690,086. Central America took 1626 sewing machines valued at \$46,099 in May, and for the 11 months took 12,384, with a value of \$317,801. The United Kingdom took 755 sewing machines with a value of \$43,631 in May, and during the 11 months took 33,148, valued at \$1,447,728. Sewing machines shipped to Canada in May numbered 809, with a value of \$40,707, and during the 11 months the number was 7708, and the value \$311,365.

The United Kingdom continues to be the best foreign market for American typewriters. In May the number shipped there was 3990, and the value \$219,217, while for the 11 months the number was 59,001, and the value \$3,240,294. Italy took 2571 American typewriters valued at \$161,145 in May, and during the 11 months took 13,963, valued at \$819,111. American typewriters shipped to France in May numbered 3235, valued at \$150,469, and for the 11 months the number was 32,602, with a value of \$1,768,410. Brazil took 1671 typewriters, with a value of \$113,831, in May, and during the 11 months took 10,691, valued at \$700,259. American typewriters shipped to Canada in May numbered 1076, with a value of \$61,652, and during the 11 months the number was 12,254, valued at \$714,911.

Printing presses exported to Mexico in May numbered 19, with a value of \$155,832, and during the 11 months the number was 256, valued at \$966,807. Japan took eight American printing presses with a value of \$30,040, and during the 11 months took 43, valued at \$367,825.

Harvesters and binders shipped from the United States to France in May numbered 3454, valued at \$617,011, and during the 11 months the number was 20,899, valued at \$3,354,109. American harvesters and binders shipped to Denmark in May numbered 1318, valued at \$200,599, and during the 11 months the number was 2833, valued at \$435,017. American harvesters shipped to Canada in May numbered 295, valued at \$46,854, and during the 11 months the number was 2317, valued at \$450,254.

Exports of Power-Driven Metal-Working Machinery

	May, 1926		April, 1926	
	No.	Value	No.	Value
Engine lathes	14	\$16,164	25	\$66,813
Turret lathes	17	30,280	11	22,696
Other lathes	41	62,731	41	43,685
Vertical boring mills and chucking machines	5	17,534	8	30,696
Thread cutting and automatic screw machines	44	38,224	75	77,150
Knee and column type milling machines	11	18,104	104	57,175
Other milling machines	22	39,632	75	89,883
Gear-cutting machines	12	51,285	16	28,437
Vertical drilling machines	44	25,857	28	21,524
Radial drilling machines	8	18,159	7	9,959
Sensitive drilling machines	281	4,934	34	3,163
Other drilling machines	81	27,542	314	60,683
Shapers and slotters	23	13,526	33	26,849
Planers .....	..	.....	111	9,508
External cylindrical machines	44	71,939	50	73,800
Internal grinding machines	9	25,268	21	34,564
Metal-working tool-sharpening machines	130	23,263	260	41,129
Total	786	\$484,442	1,213	\$697,714

PERSONAL

H. E. McDonnell, who recently was elected president of the Eastern States Blast Furnace and Coke Oven Association, is superintendent of blast furnaces, Weirton Steel Co., Weirton, W. Va., a position he has held since 1919. He was graduated from the engineering department, University of Michigan, in 1904, and entered the employ of the Illinois Steel Co. at its South Works in 1906. In 1909 he was made superintendent of the company's Bay View furnaces and in 1915 returned to the South Works as assistant superintendent of Nos. 5 to 10 furnaces. He remained in that capacity until 1918, when he resigned to become superintendent of blast furnaces at the Sparrows Point plant of the Bethlehem Steel Co. The following year he assumed the position he now holds.



H. E. MC DONNELL

Commercial Attaché Alexander V. Dye has been appointed chief of the transportation division of the Department of Commerce for a period of three months. The appointment was made to fill temporarily the vacancy caused by the resignation of the former head of the division, E. S. Gregg, now associated with the Western Electric Co. Mr. Dye for some time after the World War traveled in Europe as the representative of the American International Corporation. He has been in charge of the Mexico City office of the Department of Commerce since October, 1923. Mr. Dye assumed his new duties on June 18.

Carl Stahleker has resigned as manager, steel department, Brown-Wales Co., Boston, to become vice-president and general manager, Stahleker Steel Corporation, 19 Congress Street, Boston. He was associated with Brown-Wales Co. for 27 years and has a wide acquaintance in the New England steel trade. The Stahleker Steel Corporation has excellent facilities for a general warehouse business in merchant bars and structural shapes. It will act also as Boston representative of several Western mills. The officers of the company are: B. Atwood Robinson, president; Carl Stahleker, vice-president and general manager; Wallace Blanchard, treasurer and clerk.

Robert H. McCracken has been appointed district sales manager for the Philadelphia territory, Central Iron & Steel Co., Harrisburg, Pa., succeeding Harold S. Moore, who passed away some weeks ago. Mr. McCracken had been Mr. Moore's assistant for several years past.

George M. Bernstein, connected for a number of years with Louis E. Emerman & Co., machine tool dealers, Chicago, has resigned and will conduct his own business in the future at 549 West Washington Boulevard, Chicago, under the name of George M. Bernstein & Co., dealing in new and used machine tools, plate working and hydraulic equipment, and machinists' supplies.

Robert D. McCarter and William L. Cooper have dissolved their partnership under the name of McCarter & Cooper, consulting engineers, 50 Church Street, New York. This partnership was formed in 1919. Mr.

McCarter has joined the firm of Day & Zimmerman, Inc., Philadelphia, and is now located in Paris at 56 Rue du Faubourg St. Honoré, as their sole correspondent. Mr. Cooper will be located in London as American commercial attaché, in charge of the work of the United States Bureau of Foreign and Domestic Commerce in Great Britain. Mr. McCarter was graduated from the Ohio State University in 1895, and subsequently was with the General Electric Co. at Schenectady. In 1900 he went abroad to represent that company in London. He then became consulting engineer to the Westinghouse company and other interests, and had charge of numerous public utilities abroad. He also was president of the Russian Westinghouse Co. In 1914 he returned to America. He was a member of the Belgian Relief Committee. Mr. Cooper was graduated from the University of Michigan in 1899. After working with the engineering departments of the Sterling Boiler Co., the Riter-Conley Co., the Lackawanna Steel Co., and Field & Hinchman, Detroit, he joined Robert W. Hunt & Co., Chicago, as assistant mechanical engineer. From 1902 to 1917 he was their European manager, with headquarters in London. He established his own office in New York in 1917, to act as consulting engineer and purchasing agent for clients abroad. He then joined the Emergency Fleet Corporation and subsequently was made manager of production for District "D".

C. L. McMullen, who was some time ago elected president and director of sales, Fuller & Johnson Mfg. Co., Madison, Wis., maker of small engines, has been with the company since 1902, except for an absence of several years, during which he took a course in electrical engineering in the University of Wisconsin. He returned to the company in 1912 and was advanced successively to sales manager, general sales manager, and vice-president and director of sales. W. W. Gore has been made vice-president and director of engineering, having been with the company since 1902. He has been chief engineer in charge of design since 1913 and in 1923 was appointed director of engineering. C. K. Swafford has been made vice-president and director of production. He has been general superintendent since 1920, having been connected with the company previously as a production engineer. Paul Kney, secretary and director of credit and finance, has been with the company since 1910 and has been secretary since 1916. H. C. Wolf, treasurer and director of purchases, has been with the company since 1905.

Rollin K. Cheney, who resigned recently as general superintendent of the Southern California Iron & Steel Co., Los Angeles, now a subsidiary of the Pacific Coast Steel Co., San Francisco, has become general superintendent Knoxville Iron Works, Knoxville, Tenn. Mr. Cheney, who is a graduate of Cornell University with the class of 1903, was for many years connected with the Jones & Laughlin Steel Co., South Side Works, Pittsburgh, for the greater portion of that time having been superintendent of the special looping bar mills known as the "double-storage" mills. Later he was general superintendent Sweets Steel Co., Williamsport, Pa., engaged in reclaiming railroad rails, splitting them into several parts and rolling head, flange and web into new steel sections.

D. Lawrence Carlson has been elected president Lundell-Eckberg Mfg. Co., manufacturer of steel casements, Jamestown, N. Y., succeeding Gustaf E. Eckberg, who has resigned. Mr. Eckberg will sail for Sweden within a few weeks for an indefinite stay. Elmer W. Haglund has been elected secretary and assistant treasurer of the company.

Julius Kahn, president Truscon Steel Co., Youngstown, recently made a trip of inspection covering the company's Far Eastern plant in Japan. Vice-president T. H. Kane of the Truscon company, who accompanied him, continued his travels in the Orient, visiting Shanghai, Peking and Tientsin.

H. A. Herisse, for several years traveling New England for Surpleas, Dunn & Co., New York, has severed his connection with that company to become an active partner with Peterson Brothers, Inc., manufacturers' direct representatives, at 33 Murray Street, New York.

John T. Martindale has been elected president Van Camp Hardware & Iron Co., Indianapolis, to succeed the late Raymond P. Van Camp. An advisory board has been established as follows: C. B. Crets, vice-president; C. J. Prentiss, vice-president; A. B. Caldwell, vice-president and treasurer; J. C. Carrington, assistant secretary; A. R. Dewey, assistant treasurer; W. F. Comer, secretary, and H. C. Ballard, superintendent.

R. W. Gillispie, who has been prominently identified with the sales organization of the Bethlehem Steel Corporation for many years, has been appointed vice-president and assistant general manager and was elected a director of Jeffrey Mfg. Co., Columbus, Ohio, manufacturer of elevating and conveying machinery, and will assume his new position July 1. Mr. Gillispie came into the Bethlehem organization from the Pennsylvania Steel Co., when it was purchased by the Bethlehem company. Most of the time since then he has been assistant general manager of sales, but a short time ago he was transferred to the structural and plate department as assistant head of



R. W. GILLISPIE

that department. He was graduated from Wesleyan University in 1904.

Howard C. Woglom, factory manager Taylor & Fenn Co., Hartford, Conn., recently resigned. Former associates last week presented Mr. Woglom with a gold watch.

Justus H. Schwacke, formerly president and a director of William Sellers & Co., Incorporated, Philadelphia, resigned and retired to private life on May 31. He had been with the Sellers company continuously since July 15, 1862. He was elected secretary when the company was incorporated in 1886, director in 1902, manager in 1905 and president in 1922. He was active in the National Metal Trades Association, the National Founders Association and the Metal Manufacturers Association of Philadelphia since their formation, and has been a member of the Machinery Club of New York from its inception. Alexander Sellers was elected president of William Sellers & Co. on June 1, following the resignation of Mr. Schwacke. Mr. Sellers has been with the company since 1896, a director since 1902 and vice-president since 1905.

Leland Russell Van Wert, for the past six years a member of the faculty of the Harvard Engineering School, has been named assistant professor in metallurgy at the Carnegie Institute of Technology for next year, according to an announcement from President Thomas S. Baker. The appointment is announced as a further step in the reorganization of the Department of Mining and Metallurgical Engineering, Prof. James Aston, former metallurgical engineer with the A. M. Byers Co., having been placed in charge of the department several months ago, subsequent to the death of Prof. Fred Crabtree and the recent resignation of Prof. F. F. McIntosh. Professor Van Wert was graduated from Union College in 1916, and later studied as a graduate student in metallurgy and metallography at Yale, Massachusetts Institute of Technology and the

School of Mines and Engineering at the University of Arizona. His experience has included positions as metallurgical engineer with the Ordnance Department of the United States Army, research engineer with the Dorr Co. in New York, and metallographist, Remington-Arms Union Metallic Cartridge Co., Bridgeport.

B. A. Clements has been elected president Rome Iron Mills, Inc., with office in New York. Mr. Clements was born in Indianapolis, Oct. 3, 1877, and, after attending the public schools of Centralia, Ill., entered the service of the Illinois Central Railroad in 1891 as messenger boy. He served in various capacities in the operating department until 1906, when he was appointed chief clerk to the operating vice-president. In 1909 he was appointed general agent, reporting to the president. In 1910 Mr. Clements left the Illinois Central to accept the position of Western representative of Worth Brothers Co., with headquarters at Chicago. In April, 1916, he became vice-president of the Rome Iron Mills, Inc., Rome, N. Y., and remained in this capacity until his election as president, to succeed Edward Marshall Zehnder, whose death last week is recorded in another column.

M. F. O'Connell, who has been assistant general superintendent at Mingo works, Carnegie Steel Co., has been made general superintendent, succeeding George E. Wisener, who, as announced in our issue of March 11, retires July 1. George W. Vreeland, superintendent of blast furnaces at Mingo, Bellaire and Steubenville since 1908, has been made assistant general superintendent, and C. P. Clingerman, superintendent of blast furnaces at Bellaire, has been made superintendent of blast furnaces at Mingo and Bellaire, succeeding Mr. Vreeland.

J. C. Ward, president Edgar Allen Steel Co., Inc., Sheffield, England, who has been visiting the United States and Canada during the past eight weeks, sailed for England on the Mauretania on June 30.

George Edwards, who last week was reported to have been placed in charge of the Peck, Stow & Wilcox Co. plant, Southington, Conn., has in fact been made superintendent of the machinery division there. For some months he had been at the head of the company's Buffalo works. A. J. Trapp has been made superintendent of the small tool division at Southington and P. Hutton, superintendent of maintenance.

Laird U. Park, of the pig iron firm of Park & Williams, Real Estate Trust Building, Philadelphia, has returned from a several weeks' European trip.

Organization Changes in Lamson & Sessions Co.

Several changes in the organization of the Lamson & Sessions Co., Cleveland, manufacturer of bolts, nuts and rivets, were made at a meeting of the board of directors June 25, these resulting from the recent merger of the Kirk-Latty Mfg. Co., with the Lamson & Sessions Co. J. G. Jennings was re-elected president. George S. Case, who has been treasurer and factory manager, was elected vice-president and chairman of the executive committee. I. L. Jennings, who has been secretary and sales manager, was named vice-president and director of sales. Fred H. McIsaac, president of the Kirk-Latty Mfg. Co., was made secretary and treasurer. Charles H. Longfield, who has been sales manager of the Kirk-Latty company, was named as sales manager. Roy H. Smith, who has been vice-president and manager of the company's Kent, Ohio, plant, was named vice-president and director of factory operations of the company's three plants. The Kirk-Latty Mfg. Co. will retain its corporate existence and for the present its plant will be operated under its old name. The offices of the Lamson & Sessions Co. will be moved July 6 to the Kirk-Latty plant.

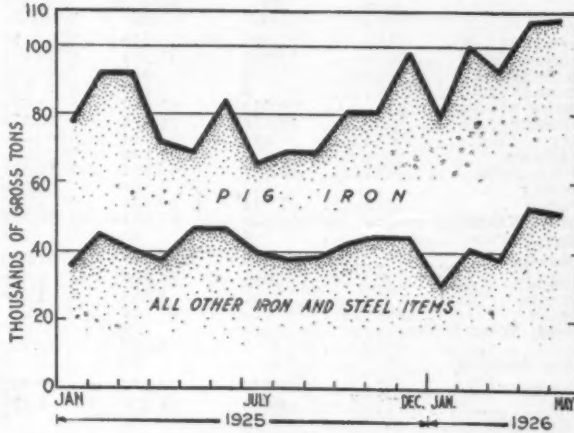
May Exports Lower; Imports Higher

Exports in First Five Months Up 23 Per Cent—Imports Gain 20 Per Cent—Heavy Incoming Tonnage of Steel Bars and Shapes

WASHINGTON, June 25.—Exports of iron and steel products in May amounted to 173,418 gross tons, according to figures of the Department of Commerce. This was a drop of 11 per cent from the 194,449 tons of the preceding month, but was considerably above the figure of May, 1925, when 150,612 tons went abroad. Imports in May at 108,731 tons made the largest total since January, 1923. Revised figures for April place that month at 107,636 tons, while the total in May, 1925, was only 67,789 tons. In January, 1923, nearly all of the incoming tonnage consisted of pig iron and scrap, only 9000 tons having been rolled and finished material.

Export gains in May, compared with April, occurred in relatively few items. The only important ones were plain structural shapes, which went up from 11,616 tons to 15,618 tons, and cast iron pipe, which advanced from 2502 tons to 5854 tons. Substantial declines were registered in steel bars, galvanized sheets, tin plate, rails and wrought pipe. While orders are reported coming in for material which, but for the strike, would have been ordered in England, shipments of this material do not appear to have made much impression upon the May figures. Those for June may tell a different story.

Imports, while only slightly greater than the total for April, showed a different distribution. Semi-finished material jumped from 2244 to 6078 tons. Steel bars



Imports Into the United States of Iron and Steel Products, Showing That Pig Iron Has Been About Half the Total, Over the Past 17 Months

advanced nearly 50 per cent, from 8582 tons to 12,386 tons. Hoops, bands and cotton ties more than doubled, as shown in the table. Rails, on the other hand, dropped from more than 10,000 tons to 1803 tons, and tin plate, of which 1327 tons came in in April, almost disappeared in May.

Pig iron continued to show the largest total in the import list, with 57,211 tons, or about 53 per cent of the total. This was almost three times the incoming pig iron tonnage of May, last year. Ferromanganese and scrap, on the other hand, dropped off sharply from last year, neither one showing as much as one-third of the previous total.

During the first five months of 1926 pig iron accounted for 57 per cent of all incoming tonnage. Wrought and finished steel at 128,914 tons was 26 per

Exports of Iron and Steel from the United States
(In Gross Tons)

	May		Eleven Months Ended May		April, 1926	First Five Months	
	1926	1925	1926	1925	1926	1926	1925
Pig iron	1,107	2,316	29,218	27,056	2,010	7,747	8,696
Ferromanganese	1	1,007	1,587	4,187	2	171	4,063
Scrap	12,654	15,361	89,382	57,308	13,759	49,906	30,112
Pig iron, ferroalloys and scrap	13,762	18,684	120,187	88,551	15,771	57,824	42,871
Ingot, blooms, billets, sheet bar, skelp ..	7,981	5,109	80,689	82,827	5,966	24,493	26,051
Wire rods	1,899	2,251	16,868	17,357	1,201	8,607	10,368
Semi-finished steel	9,880	7,360	97,557	100,184	7,167	33,100	36,419
Steel bars	10,529	9,118	115,610	89,570	13,096	59,432	48,588
Alloy steel bars	273	574	3,625	3,181	508	2,238	2,078
Iron bars	519	473	3,633	3,983	509	1,803	2,225
Plates, iron and steel	11,155	11,073	104,804	77,796	10,897	54,181	45,449
Sheets, galvanized	13,196	10,004	147,484	135,184	17,746	75,928	79,114
Sheets, black steel	17,415	5,284	137,535	97,266	17,760	79,614	32,164
Sheets, black iron	1,461	1,281	17,972	10,727	1,328	9,405	5,055
Hoops, bands, strip steel	3,929	3,554	43,421	30,626	4,082	22,269	16,354
Tin plate, terne plate	13,408	10,214	169,516	129,155	22,124	85,910	66,493
Structural shapes, plain material	15,618	6,190	121,046	91,198	11,616	59,974	35,764
Structural material, fabricated	5,891	4,858	79,641	62,224	8,301	40,050	29,479
Steel rails	11,405	16,520	132,789	164,833	15,859	56,696	59,937
Rail fastenings, switches, frogs, etc.	2,742	3,441	36,175	28,624	2,613	17,481	12,693
Boiler tubes, welded pipe and fittings ..	20,063	20,722	247,691	184,760	25,910	117,643	93,247
Plain wire	3,394	3,385	33,583	28,442	3,358	17,122	16,067
Barbed wire and woven wire fencing ..	4,925	6,939	60,154	80,133	5,997	26,220	31,966
Wire cloth and screening	189	170	1,811	1,175	141	771	768
Wire rope and cable	1,256	413	5,594	3,774	947	6,036	5,559
Wire nails	1,145	760	11,065	9,060	1,242	5,385	3,668
Other nails and tacks	719	747	8,266	8,050	738	3,664	4,042
Horseshoes	15	95	612	743	30	240	319
Bolts, nuts, rivets and washers, except track	1,121	1,720	14,502	16,397	1,471	5,963	7,117
Rolled and finished steel	140,368	117,535	1,496,529	1,256,901	165,773	748,024	598,146
Cast iron pipe and fittings	5,854	2,535	31,659	26,503	2,502	14,165	11,694
Car wheels and axles	856	2,202	14,860	21,264	1,175	7,078	9,143
Iron castings	814	574	9,240	7,704	673	3,391	3,723
Steel castings	856	420	5,802	4,692	1,151	4,301	2,418
Forgings	178	163	2,203	1,786	237	1,194	1,034
Castings and forgings	8,558	5,944	63,764	61,949	5,738	30,129	28,012
All other	850	1,089	11,317	2,592	.....	.....	.....
Total	173,418	150,612	1,789,354	1,510,177	194,449	869,077	705,448

United States Imports of Iron and Steel Products by Countries of Origin

(In Gross Tons)			
	May, 1926	First Five Months, 1926	April, 1926
Austria	23	349	93
Belgium	18,055	75,908	20,575
Czechoslovakia	6	653	22
Finland	2	799	340
France	20,640	61,987	12,661
Germany	28,678	96,224	18,578
Italy	125	164	.....
Lithuania .....	.....	1,530	.....
Netherlands	6,207	50,982	11,591
Norway	877	5,808	2,505
Sweden	1,724	10,369	2,101
United Kingdom	15,320	87,399	19,208
Other Europe	3	39	1
<i>Europe</i>	<i>91,660</i>	<i>392,211</i>	<i>92,294</i>
Canada	5,061	28,606	8,746
Panama .....	.....	7,748	1,114
Mexico .....	.....	172	.....
British West Indies .....	.....	403	300
Cuba	2	3,599	.....
Other America .....	.....	67	1
<i>America</i>	<i>5,063</i>	<i>40,595</i>	<i>10,161</i>
India	12,005	55,933	9,798
Other Asia	3	15	2
Total	108,731	488,754	107,636

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914....	2,406,218	221,582	145,720
*Average, 1915 to 1918....	5,295,333	438,462	1,468,020
*Average, 1919 to 1923....	3,078,724	123,837	149,218
Calendar year 1924.....	1,805,073	41,478	114,417
January, 1925	141,777	1,298	5,764
February	102,299	1,413	7,516
March	155,384	2,037	7,951
April	155,375	1,632	6,831
May	150,612	2,316	7,360
June	136,847	2,507	7,804
Fiscal year 1925.....	1,663,084	29,563	107,988
July	189,861	2,348	10,701
August	188,465	5,944	8,024
September	136,791	3,349	8,186
October	141,817	2,874	8,432
November	171,134	4,272	16,783
December	142,209	2,626	12,282
Calendar year 1925.....	1,762,571	32,674	108,681
January, 1926	174,585	1,663	4,388
February	157,187	1,478	5,615
March	169,438	1,489	6,050
April	194,449	2,010	7,167
May	173,418	1,107	9,880
Eleven months	1,789,354	29,218	97,557
*Calendar years.			

cent of the total. Nearly one-third of this consisted of steel bars, while more than one-fourth of the rolled total was structural shapes. Rails and steel pipe were the next largest items. All of these items showed gains over last year, bars and pipe recording respectively 85 and 143 per cent gains.

Germany took the lead in May in the pig iron movement into the United States and in the five months showed a slight excess over pig iron imports from Great Britain. British India, Netherlands and France followed in that order in the five months, these five countries having accounted for about 96 per cent of the total incoming tonnage.

Considering all iron and steel products, Germany again was in the lead in May in incoming shipments, with more than one-fourth of the month's tonnage. France, Belgium, United Kingdom and India followed in that order—all of them far above any competitors.

In the first five months Germany was in the lead, with United Kingdom, Belgium, France, India and Netherlands well ahead of all competitors.

Imports of iron ore in May at 238,678 gross tons record a gain of 23 per cent over April and of 60 per cent over May, 1925. The increase over April was due largely to a gain of 20,000 tons in shipments from Cuba, 16,000 tons from French Africa, and 28,000 tons from undistributed countries. There was a drop of 37,000 tons in ore imports from Chile.

Of the large incoming tonnage of steel bars, Belgium, with 7253 tons, furnished almost 60 per cent. France was second with 2492 tons. Great Britain furnished nearly half of the hoops and bands, with 1897 tons; Germany, France and Belgium furnishing nearly all of the remainder. Structural shapes from Belgium at 5664 tons accounted for more than half the month's total. Germany sent 2779 tons. Belgium furnished

Imports of Iron and Steel into the United States

	May		Eleven Months Ended May		April, 1926	First Five Months	
	1926	1925	1926	1925		1926	1925
	57,211	21,260	485,199	289,542	55,473	275,054	194,509
Pig iron	57,211	21,260	485,199	289,542	55,473	275,054	194,509
Ferromanganese*	2,027	8,321	(a) 53,018	65,696	5,235	18,968	37,388
Ferrosilicon	975	400	5,811	7,336	1,714	4,038	2,546
Scrap	1,939	6,738	72,464	80,164	2,203	21,743	42,978
<i>Pig iron, ferroalloys and scrap</i>	<i>62,152</i>	<i>36,719</i>	<i>616,492</i>	<i>442,738</i>	<i>64,625</i>	<i>319,803</i>	<i>277,421</i>
Steel ingots, blooms, billets and slabs... ..	5,377	1,732	23,226	32,290	1,448	13,861	15,254
Iron blooms, slabs, etc. ....	.....	.....	779	.....	13	42	1
Wire rods	701	1,212	7,728	5,776	783	4,145	3,509
<i>Semi-finished steel</i>	<i>6,078</i>	<i>2,944</i>	<i>31,733</i>	<i>38,066</i>	<i>2,244</i>	<i>18,048</i>	<i>18,764</i>
Rails and splice bars	1,803	2,949	31,883	39,826	10,015	18,221	18,173
Structural shapes	9,291	7,382	68,729	55,800	8,553	33,810	31,024
Boiler and other plates	881	2	2,629	779	63	1,927	100
Sheets and saw plates	593	463	4,131	3,391	769	2,564	1,904
Steel bars	12,386	7,704	71,133	(b) 21,926	8,582	40,637	21,934
Bar iron	237	4,026	6,375	9,479	757	2,489	7,487
Hoops, bands and cotton ties	3,973	.....	14,159	.....	1,900	9,343	5,086
Tubular products (wrought)†	1,847	4,263	30,190	40,872	1,976	10,165	4,194
Nails, tacks, staples	380	156	3,525	550	361	1,242	317
Tin plate	15	35	1,651	328	1,327	1,395	107
Bolts, nuts, rivets and washers	19	6	279	115	69	225	49
Round iron and steel wire	182	507	3,757	2,727	433	1,621	1,418
Barbed wire	166	.....	5,883	.....	172	2,050	1,980
Flat wire; strip steel	131	228	2,210	1,793	238	1,098	918
Steel telegraph and telephone wire .....	.....	.....	215	.....	.....	82	373
Wire rope and strand	259	201	1,552	6,063	172	869	747
Other wire	331	.....	1,421	.....	205	1,014	163
Wire cloth and screening	49	.....	382	.....	37	162	97
<i>Rolled and finished steel†</i>	<i>32,543</i>	<i>27,922</i>	<i>250,104</i>	<i>183,649</i>	<i>35,629</i>	<i>128,914</i>	<i>96,071</i>
Cast iron pipe	7,775	.....	55,943	.....	5,040	20,982	12,358
Castings and forgings	183	532	2,294	2,590	98	1,007	1,434
Total	108,731	68,117	956,566	667,043	107,636	488,754	406,048
Manganese ore*	21,633	29,139	(a) 357,092	185,585	59,666	173,427	93,574
Iron ore	238,678	149,958	2,107,811	2,006,110	194,731	980,035	879,713
Magnesite (dead burned)	8,598	504	61,537	52,367	8,534	44,884	34,422

*Manganese content only. Shipments of ore from Cuba, which are stated in gross weight, amounted to 27 tons in May, 1926.

†Prior to January, 1926, this includes some cast iron pipe, under the heading "tubular products."

(a) Revised. Russia was last month credited with furnishing 4619 tons of ferromanganese. The Department now states that this was manganese ore.

(b) Five months only; previous to Jan. 1, 1925, bars were lumped in with ingots, etc.

United States Imports of Pig Iron by Countries of Shipment
(In Gross Tons)

	May		April,	March,	February,	January,	5 Mo.,
	1926	1925	1926	1926	1926	1926	1926
British India	11,848	12,951	9,798	14,568	9,990	9,329	55,523
Netherlands	4,780	3,015	8,330	9,231	6,670	7,173	26,184
Germany	21,419	3,075	13,629	13,900	16,869	8,395	74,112
United Kingdom	12,236	900	15,651	12,250	15,826	15,833	71,796
Canada	296	175	939	559	593	540	2,927
Belgium	1,100	1,069	650	1,733	1,230	930	5,643
France	5,478	.....	5,051	2,150	7,691	4,663	25,033
Other countries	54	75	411	444	253	1,560	2,722
Total	57,211	21,260	54,359	54,825	59,122	48,423	273,940

Sources of American Imports of Iron Ore

(In Gross Tons)

	May		Eleven Months Ended May	
	1926	1925	1926	1925
Spain .....	.....	13,236	90,862	125,127
Sweden	7,051	.....	112,795	256,548
Canada	10,225	360	16,462	5,180
Cuba	59,260	33,166	473,562	352,816
Chile	102,600	93,300	1,177,400	1,064,175
French Africa	30,966	8,000	142,552	180,439
Other countries	28,636	1,896	94,179	21,825
Total	238,678	149,958	2,107,812	2,006,110

Imports of Iron and Steel in Gross Tons

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
Calendar year 1924....	556,814	209,109	59,910	255,157
January, 1925	77,105	41,344	7,165	15,498
February	92,353	47,803	10,997	9,666
March	92,115	50,803	5,691	24,330
April	71,233	33,299	7,699	14,941
May	67,789	21,260	8,721	29,139
June	82,853	35,657	4,359	20,720
Fiscal year 1925.....	749,393	325,199	77,291	186,939
July	64,642	24,881	3,601	28,586
August	68,489	30,707	3,526	34,168
September	68,445	29,917	3,594	22,709
October	80,045	37,709	11,226	23,054
November	79,771	34,712	6,173	33,238
December	98,400	53,333	7,703	36,908
Calendar year 1925....	943,240	441,425	80,269	265,688
January, 1926	79,067	48,428	3,055	37,498
February	100,273	59,122	5,194	27,239
March	93,107	54,825	4,606	27,391
April	107,636	54,359	6,949	59,666
May	108,731	57,211	3,002	21,633
Eleven months	956,566	485,199	58,829	357,092

*Not included in "total imports." These figures are for manganese contents of the ore.

more than two-thirds of all the rails, with shipments of 1260 tons. Germany, with 1013 tons, and Great Britain, with 604 tons, accounted for seven-eighths the incoming steel pipe shipments.

In cast iron pipe France furnished 5996 tons of the total of 7775 tons. Belgium sent 1130 tons; the Netherlands, 647 tons. France furnished nearly all the semi-finished material, having sent 4131 tons. Belgium and Germany, with 507 tons and 466 tons, were next.

IMPORTERS MORE ACTIVE

Continental Hoops Sold Here and Some Structural Steel—May Shade Rail Syndicate Price

NEW YORK, June 29.—With the Treasury Department postponing the imposing of countervailing duties on German steel imports, more or less indefinitely, importers are proceeding with less difficulty, and the tendency is to return to quoting on a basis of c.i.f. duty paid. The smaller importers, however, are acting with caution, as a reapplication of the decision, although not at present expected, might represent a considerable loss to them.

Sales of European steel are for the most part confined to small lots of 100 or 200 tons to a customer. Recently there has been a fair demand for structural material, and one importer in New York reports the sale of two 100-ton lots, c.i.f., New York. The current quotation on such material is reported to range from 1.60c. to 1.70c. per lb., c.i.f., duty paid, the lower price generally applying on the larger lots.

A fair volume of activity in sales of hoops is reported by importers from Germany and Belgium, and quotations are being submitted on several tonnages of bars and other material for South American markets. One inquiry for reinforcing bars to be shipped to Buenaventura, Colombia, covers 3000 tons. An exporter to Mexico and South and Central American markets is inquiring for 2000 tons of 55-lb. rails and 35 sets of switches for shipment to Colombia, accepting both European and American bids.

On rails there is an impression in quarters dealing with Japan that the established prices of the European Rail Makers Association are not holding, at least as far as the Japanese market is concerned. This report that the European mills have shaded quotations to Japan is apparently based in part on the price understood to have been quoted successfully by a large Luxembourg company on the eight miles of 91-lb. high T-rails (about 1200 tons) for Tokio municipality. Based on the rail syndicate's published export quotation of £6 per ton, f.o.b., Antwerp, the price would have been between \$37 and \$38 per ton, c.i.f., Japan. The business is reported to have been placed at about

\$1 under this price, in the face of the fact that the material was high T-rails. Another Japanese rail specification placed recently was one mile of grooved and one mile of guard rails for Kyoto municipality, placed with the New York branch of a Japanese export house for execution by an American mill.

Inquiry from Japan, with the exception of a continued moderate demand for rails and railroad material, is extremely light. Despite the British coal strike, which has undoubtedly interfered somewhat with shipments of tin plate and sheets to Japanese buyers, no inclination has as yet developed to place business in the United States. The latest purchase of the Nippon Oil Co., placed in March, was divided between Welsh and American tin plate mills. Recent reports from Japan are that the total British tonnage has been received, despite the strike.

German Steel Corporation Expected to Establish Foreign Offices

LÜBECK, GERMANY, June 11.—Exporters and importers of iron and steel are evincing considerable interest in the continued reports that the new United Steel Works Co. will follow the example of the United States Steel Corporation and establish export sales offices in various foreign markets. At present, the various companies which entered into the merger are still represented by their own offices or by importers acting as their agents.

Such a change in the methods of transacting export business would seriously affect many of the small exporters of iron and steel, resulting in competition that would be difficult to meet. The establishment of branch offices is generally expected as a future development, although at present the former connections of the companies are functioning.

The spectacular use of vertical whirling shafts as sails to propel a ship will be demonstrated at the Power Show to be held in the Grand Central Palace Dec. 6-11, 1926. There will be a small model of the rotor ship, designed by Anton Flettner, which arrived in New York harbor in May.

European Cannery Buy Here

Welsh Mills Unable to Meet Demand—Some Mills Operate on Foreign Material—
Continental Prices Softer—Germans Defend Bounty

(By Cable)

LONDON, ENGLAND, June 29.

PIG IRON is strong but demand is small. Stocks are practically exhausted except for a few lots in second hands and prices are really nominal. There is some export demand for hematite iron but the domestic market is inactive. Foreign ore is stagnant with Bilbao Rubio prices nominal.

There is increased buying of finished iron and steel, consumers realizing that prices are low and the general tendency of the market upward. Few plants are working although a few mills are carrying on with reduced fuel supplies.

Tin plate is strong, with an active demand for stock material. Buyers are offering 25s. per base box. Tin plate produced with foreign bars and coal is quoted at 23s. per base box, July delivery. For shipment after

the strike is over, 20s. 6d. per base box is quoted.

The situation is becoming critical for European cannery. Some Portuguese packers have closed their works and others will be forced to close unless prompt dispatch of tin plate is effected. Increasing sales of American tin plate are reported.

Galvanized sheets are strong although business is light. Makers are quoting October as the earliest delivery and not anxious to sell. The black sheet market is stagnant with Germany selling Japanese specifications at less than £13 f.o.b.

Continental steel is generally weaker in the absence of substantial sales to British consumers. Prompt-shipment semi-finished material is commanding the full quoted price on business with British mills. The German Raw Steel Syndicate has increased the authorized output of its members for July by 2.50 per cent.

BELGIAN PRICES DECLINE

Wages, Freight Rates and Raw Materials Advance but Lack of Orders Forces Concessions

ANTWERP, BELGIUM, June 19.—Continued fluctuation of the exchange is an obstacle to the booking of large tonnages, buyers preferring to await a more stable situation. In consequence a few mills, largely in Luxemburg and in Lorraine, have been forced to curtail operations and others are granting concessions in order to maintain a sufficient tonnage for continued operation on the present schedule. In addition, costs are increasing, as a result of the downward movement of the franc in foreign exchange, and the increased cost of living has necessitated advances in wages. Coke has increased in the past month and freight rates are higher. The pressure of buyers for lower prices is beginning to draw concessions from the mills in need of a backlog and foreign competition continues keen, particularly on semi-finished material and structural steel.

Pig Iron.—Prices are firm and unchanged and, as

a result of further depreciation of the franc, it is reported that the price of phosphoric pig iron will be advanced for July to 525 to 530 fr. per ton, f.o.b. furnace (\$15.15 to \$15.30). The export price for No. 3 phosphoric pig iron will probably continue unchanged at £3 5s. to £3 6s. (\$15.70 to \$15.95) per metric ton, f.o.b. Antwerp. Export sales are small because of the British coal strike.

Finished Material.—With but little inquiry of any consequence before the market, the few buyers willing to place business are in a position to dictate low prices, particularly when the tonnage involved is larger than the usual small lots. Some mills are accepting this condition and offering concessions, while a few have begun to curtail production. Steel bars are quoted over a wide range of prices, with as low as £4 14s. per metric ton (about \$23.05) obtainable on desirable orders. Keen competition of French and German mills on beams has brought the price to about £4 12s. per metric ton (\$22.50). Reinforcing bars are quoted at about £5 5s. per metric ton (\$25.75) and steel hoops at £6 2s. 6d. per metric ton (about \$30) f.o.b. Antwerp.

Sheets.—Competition of German mills is a serious factor in both the domestic and export market and the

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.86 per £ as follows:

Durham coke, del'd..	£0 18½s.		\$4.50	
Bilbao Rubio ore†...	1 1	to £1 1¼s.	5.10	to \$5.16
Cleveland No. 1 fdy..	4 3½ and 4 4*		20.29	and 20.41*
Cleveland No. 3 fdy..	4 1 and 4 1¼*		19.68	and 19.80*
Cleveland No. 4 fdy..	4 0 and 4 0¼*		19.44	and 19.56*
Cleveland No. 4 forge	3 19½ and 4 0*		19.19	and 19.44*
Cleveland basic (nom.)	3 15 and 3 15½*		18.23	and 18.35*
East Coast mixed...	3 18½ and 4 0*		19.07	and 19.44*
East Coast hematite...	3 16 to 3 16½		18.46	to 18.58
Ferromanganese	15 0		72.90	
*Ferromanganese	14 0		68.04	
Rails, 60 lb. and up...	6 15 to 7 5		32.80	to 35.24
Billets	6 0 to 7 10		29.16	to 36.45
Sheet and tin plate bars, Welsh	6 5		\$0.38	
Tin plates, base box...	1 0½ to 1 5		4.98	to 6.08
Black sheets, Japanese specifications	13 10 to 14 0		65.60	to 68.04
			C. per Lb.	
Ship plates	7 5 to 7 15		1.57	to 1.68
Boiler plates	9 5 to 11 0		2.00	to 2.39
Tees	7 10 to 8 0		1.62	to 1.73
Channels	6 15 to 7 5		1.46	to 1.57
Beams	6 10 to 7 0		1.41	to 1.51
Round bars, ¾ to 3 in.	7 12½ to 8 2½		1.65	to 1.77
Steel hoops	10 10 and 11 0*		2.28	and 2.39*
Black sheets, 24 gage	10 15 to 11 0		2.33	to 2.39
Galv. sheets, 24 gage	16 10		3.58	
Cold rolled steel strip, 20 gage	18 0		3.91	

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

Foundry pig iron:(a)				
Belgium	£3 6s.	to £3 7s.	\$16.03	to \$16.28
France	3 6	to 3 7	16.03	to 16.28
Luxemburg	3 6	to 3 7	16.03	to 16.28
Basic pig iron:(a)				
Belgium	2 16	to 2 17	13.60	to 13.85
France	2 16	to 2 17	13.60	do 13.85
Luxemburg	2 16	to 2 17	13.60	to 13.85
Coke	0 18		4.37	
Billets:				
Belgium	4 5	to 4 7	20.65	to 21.14
France	4 5	to 4 7	20.65	to 21.14
Merchant bars:				
Belgium	4 13	to 4 15	1.03	to 1.04
Luxemburg	4 13	to 4 15	1.03	to 1.04
France	4 13	to 4 15	1.03	to 1.04
Joists (beams):				
Belgium	4 12	to 4 14	1.01	to 1.03
Luxemburg	4 12	to 4 14	1.01	to 1.03
France	4 12	to 4 14	1.01	to 1.03
Angles:				
Belgium	5 2	to 5 4	1.12	to 1.15
½-in. plates:				
Belgium	5 12	to 5 16	1.23	to 1.27
Germany	5 12	to 5 16	1.23	to 1.27
¾-in. ship plates:				
Belgium	5 2	to 5 4	1.12	to 1.15
Luxemburg	5 2	to 5 4	1.12	to 1.15
Sheets, heavy:				
Belgium	6 3	to 6 4	1.35	to 1.37
Germany	6 3	to 6 4	1.35	to 1.37

(a) Nominal.

tendency of prices, as in the case of other steel products, is toward weakness. Most mills, however, are not inclined to meet the low price ideas of buyers, although some shading is in evidence. Light gage sheets about 1/16-in. thick are quoted at £7 per metric ton (\$34.30), 3/32-in. thick at £6 5s. per metric ton (\$30.65) and 1/8-in. at £5 8s. 6d. per ton (\$26.60) all f.o.b. Antwerp.

FRENCH MILLS QUOTE LOW

Domestic Market Firm but Export Prices Soft— Export Pig Iron Above Home Prices

PARIS, FRANCE, June 18.—Fluctuation of the exchange and instability of the political situation are curtailing purchases and sales of steel to a minimum. Neither the producers nor the consumers are apparently anxious to contract for more than immediate requirements, as a change in the political situation or further depreciation of the franc may suddenly change the whole economic situation. Domestic prices continue to advance but purchasing is extremely light. In export trade, prices are again softening, following a brief period, a fortnight ago, when the offering of concessions had almost disappeared. As a result of this renewed downward trend of export quotations, buyers in foreign markets are inclined to await still further reductions or concessions in prices.

Pig Iron.—Foundry consumers in France are only moderately active but prices continue firm with a tendency to advance, producers endeavoring to offset increased costs as a result of the depreciated exchange. The producers of phosphoric pig iron have decided to maintain the June price of 460 fr. (\$11.25) per ton for July. This price in June was 50 fr. (\$1.45) per ton less than the export quotation and will be about 75 fr. (\$2.15) per ton less than the export price in July. The July quota for domestic consumption is 45,000 tons, equal to the June tonnage. Hematite iron has been advanced 45 fr. (\$1.30) per ton, effective July 1, and spiegeleisen 50 fr. (\$1.45) per ton. Export prices of phosphoric continue unchanged with £3 5s. to £3 6s. (\$15.80 to \$16.05) per metric ton quoted for shipment to Britain and £3 2s. to £3 3s. (\$15.05 to \$15.30) per metric ton to Italian consumers.

Semi-Finished Material.—With export purchasing light there has been little or no pressure for concessions and prices show slight advances, which might not be maintained in a more active market. Basic blooms are up about 1s. per ton, £3 19s. to £4 (\$19.20 to \$19.45) f.o.b. Antwerp and billets have advanced about 6d. per ton, £4 5s. to £4 6s. (\$20.65 to \$20.90) f.o.b. Antwerp.

Finished Material.—Prices are firm and mills are not inclined to seek long-term contracts. Demand for small shapes and bars is active and available supplies are small. Although purchasing of beams is light the price is strong to domestic consumers. The export market on all finished material is inclined toward weakness. Bars have declined to as little as £4 14s. (\$22.85) per metric ton but beams are holding at about £4 11s. to £4 13s. (\$22.10 to \$22.60) f.o.b. Antwerp.

German Steel Market Improves but Output Is Below Year Ago

BERLIN, GERMANY, June 10.—Evidence of improvement in the iron and steel industry is beginning to appear. The German steel industry gained nothing from the British strike and, even had British consumers continued to purchase semi-finished material on the Continent, orders would have gone to French and Belgian makers.

Production of pig iron and steel is increasing but still falls far below the 1925 production. April pig iron output was 668,203 metric tons compared with 896,362 metric tons in April, 1925. Ingot production was 868,557 tons compared with 1,064,420 tons in April, 1925.

Lately only about 20 per cent of the iron mines

and about 25 per cent of the blast furnace capacity in the Siegerland district have been in operation. It is suggested that aid be extended to the Siegerland ore industry in the form of a 2 m. per ton subsidy, provided this is passed on by the ore producers to the blast furnaces in the district.

The value of the Mannesmann properties in the Riff has increased greatly as a result of the ending of the war in Morocco. The Government is considering the extension of aid to the Mannesmann interests by granting a credit with the Moroccan properties as security.

Increased demand in the domestic market for fabricated material is reported and the general improvement in business is reflected in a decrease of the figures on unemployment.

GERMAN BOUNTY DEFENDED

Intended to Offset German Tariff and Remove Disadvantage from Depreciated Franc

BERLIN, GERMANY, June 10.—The recent decision of the United States Treasury Department, imposing countervailing duties on German steel to offset the export bounty [postponed June 18 until further information is obtained] has caused considerable discussion in German steel circles and the business press. Although the press denies that such bounties are paid, it is rather generally conceded in steel circles that returns are allowed on exported metal goods. It is pointed out, however, that these bounties are private, being paid by the Ingot Steel Syndicate.

In justification of these payments, the depreciation of French and Belgian exchange is cited as equivalent to a "bounty" in those steel producing countries, as it automatically reduces the cost of wages, freight rates and other factors in the manufacture and movement of steel. The German bounty is pointed out as merely providing German consumers of semi-finished and finished products with their raw materials at world market prices, which are regulated by the low Belgian and French quotations, determined by the depreciated franc.

British consumers, it is explained, are able to purchase French or Belgian steel for further manufacture at extremely low prices, as there is no import duty. On the other hand, German consumers must pay advances equivalent to the German tariff on steel should they purchase their requirements in either France or Belgium. Consequently, the bounty arrangement, based on world market prices and claimed to be similar to a pre-war agreement, is substantially for the purpose of aiding German exporters to meet French and Belgian competition. These differences in world market and domestic prices in Germany are determined once a month by a meeting of producers and consumers, as previously pointed out in THE IRON AGE. For June the following world market and domestic prices were announced:

World Market Prices Established in Germany

	Domestic, Marks	World Market, Marks
Ingot	104	90
Blooms	111.50	92
Billets	119	95
Slabs	124	98
Structural shapes	134	95
Bars	131	98
Hoops	154	122.50
Wire rods	138	112
Heavy sheets	149	112
Medium sheets	130	117.50
Light sheets	147.50 to 150.00	135
Thin sheets, under 1 mm.	155.00 to 160.00	155

Payment of a bounty also exists on pig iron when it is sold for the manufacture of export products. As fixed by the pig iron syndicate for June, this bounty amounts to 6 m. per metric ton.

While it is apparently agreed that the objection of the United States to bounty-aided exports is well founded, the German contention is that the cause lies with France and Belgium, suffering from a depreciated exchange, which constitutes a more effective export bounty than the rebate system of Germany.

Defects Hiding in Steel Castings

(Continued from page 13)

structed to permit proper feeding. Expensive machining operations were performed on this casting, and the shrinkage cavity, which is shown as a thin dark line at the connection of the flange and the sleeve, was reported to have been a typical defect. The pattern was made so that the sleeve had to be molded "up." Reversing it was not feasible because of difficulty in placing risers on the flange, without interfering with three lugs.

The customer's consent was obtained for making new pattern equipment, so that the piece could be molded horizontally. This eliminated all shrinkage difficulties and lessened the cost of machining excess stock. The example is one of many instances that demonstrate the great importance of correct pattern design on the manufacture of sound castings.

The disturbance of desirably uniform cooling by the introduction of a heat-retaining core is well illustrated in Fig. 4. The pattern was constructed to mold with the clutch jaws down, the neck below the thin flange being produced by a relatively thin ring-core. This permitted molding the entire casting in the drag with only the risers in the cope.

Had proper thought been given this pattern before it was molded, it would have been evident that the ring-core would have an undesirable effect. With heavy bodies of metal in contact with its inner and lower surfaces and a riser immediately above it, the core could not be expected to transmit adequately all of the heat generated. For this reason, in the progress of cooling, the radiation of temperature in the outer face of the neck was unable to approximate that in the upper and lower sections. The core was literally stuffed with heat. The jaws below and the flange and risers above had ample surfaces for heat transmission, while the cooling of the neck was wholly dependent upon radiation through the core. The clutch jaws satisfied their contraction requirements from the still liquid neck, leaving a cavity which could not be filled from the risers that had solidified. The method of correcting this condition was to reduce the depth of the ring-core, so solidification could progress normally.

Causes of Blows

THE causes of blows are primarily the same as those that produce porosity. The essential variations distinguishing the causes for pin holes (the common term for porosity), and those for blow-holes (of larger individual area than cavities collectively termed porosity), differ in degree and in the extent to which they may be combined.

Cavities produced by blows are characteristic in appearance and are readily distinguishable from those caused by shrinkage. The interior of what is generally termed a blow-hole is smooth, having either a bright silvery luster or a mottled appearance due to temper colors. In the case of a combination of a shrinkage and a blow, both characteristic surfaces are present in the cavity.

An Unusual Blow-Hole

Fig. 5 illustrates an unusual blow-hole. Although discovered during the preliminary stages of the cleaning process, it is of a type that occasionally evades casual inspection. The flange in which this defect occurred was badly mutilated as a result of cleaning operations incidental to critical examination, and the photograph does not show how nearly perfect was the original surface appearance of the casting. The faulty member was entirely hollow, and the metal completely surrounded the gas cavity. The skin was very thin, however, and did not withstand the rough treatment it received in the cleaning room, so that the defective condition was discovered before the casting had progressed far. The cause of this blow was the careless omission by the molder of the vents required in this

part of the mold to remove the gases normally generated there.

It is unnecessary to show numerous illustrations of the defects termed blows for clearly indicating their characteristic appearance. They may be caused by conditions in a particular mold which are not typical of other molds from the same pattern; or they may be produced by causes related to production methods, improperly planned or executed, affecting many castings of the same kind. It is difficult sometimes to determine why excess gas should have demonstrated itself in the form of pin-holes rather than blow-holes; or why, in other cases, there appears to have been a preference that is reversed. Physical characteristics of these defects differ widely as to the volumes of metal displaced by the individual cavities.

It is believed by some foundrymen that cold metal occasionally produces blow-holes by a rapid solidification, preventing the normal escape of gas which, if unrestrained, will work its way to the uppermost surface of the liquid metal, and escape. Defective castings have been observed in which there appeared to be a decided relationship between defects produced by cold metal, and those relatively large gas cavities termed blow-holes which are sometimes the occasion for condemnation of a casting that superficially appeared to be perfect.

Shifts and Precision

THE demand for precision in steel castings is increasing. It is met by the use of well-made and properly maintained pattern equipment, flasks, and molding machines.

Shifts occur in castings when apparently every precaution is taken to safeguard against them. Unless a casting is of such a design that it may be molded entirely in either the drag or cope, the possibility of a shift is always present, and if it has occurred, it is not ordinarily noticeable until the casting has been poured and shaken out.

Relatively few shifted castings pass the final inspection. A large majority are easily seen, and the casting is rejected or repaired according to the importance of the defect. Shifted castings that pass inspection are usually of such a nature that the casting outlines do not appear to be disturbed. Occasionally these are not discovered until after the castings are set up for machining.

Castings made in large quantities are usually checked with templates that will reveal shifts, if they exist. Short orders present greater possibilities in the shipment of shifted castings, as the small quantity of pieces required does not warrant the construction of gages. The inspectors may not discover a shift in a casting from a small lot, due to lack of familiarity with the correct outline of the casting.

Poor pattern equipment, ill-fitting flask pins and sockets, careless molding, "whipping" in molding machines, and shop accidents in which a properly closed mold is jarred out of alignment, are responsible for most of the shifted castings. By far the largest percentage of them advance only a short way in the cleaning process before they are discovered. This is largely due to the fact that patterns having sections in both cope and drag are usually constructed with a parting line, which discloses the defect, regardless of its cause.

Cheap Patterns a Source of Trouble

The necessity for detecting shifts is realized by experienced pattern makers, who ordinarily construct patterns so that they will readily reveal any misplacement of mold or pattern. It is in the construction of the cheap pattern that this desirable practice is usually ignored. A typical example is a disk with bosses on both faces. The cheapest way to construct such a pattern is to turn the disk, nail on the bosses for the drag side, and dowel the bosses for the cope. This places the parting line at the edge of the disk, with bosses only in the cope section of the flask. Any movement of the cope will result in a shifting of the bosses from their proper position. The shift may be

sufficient to render the casting useless, yet not be discernible to the inspector unless centers are actually laid out. If the pattern is split so that a part of the disk is in each of the two mold sections, any shift becomes apparent because of the projection at the parting line.

Wrong Core and Core Shifts

CASTINGS rejected by customers because of the use of the wrong core are usually made from a double-purpose pattern. These are patterns for castings intended to differ as to cored cavities, or in other details permitting the use of one pattern for two or more kinds of castings resembling each other but having certain distinguishing features. A misinterpretation of the order by the foundry, insufficient instructions marked on the pattern or core boxes, resemblance of core prints, or interchangeability of loose pieces, may cause the shipment of castings of wrong dimension.

Generally speaking, core shifts are readily discernible when rigid inspection is maintained. In most cases complaints from customers regarding these defects arise from those instances where the inspector regarded the extent of the shift as insufficient to cause difficulty. Familiarity with finish allowances and with the application of the castings reduces to a minimum complaints of the nature mentioned.

Pattern equipment has a decided bearing on this defect. Cores that extend through a casting should have a print in both the cope and the drag. If this is impossible, and the core must be printed in the drag only, the print should be sufficiently deep to anchor the core securely. This is also true when the core projects into but not through the casting. The force of the incoming metal will drive the core out of place unless its bearing is sufficient to hold it against the pressure.

Broken Cores

A CORE which, through weakness due either to design, poor material, or poor ramming, breaks and is washed, and is finally lodged as a sand inclosure in some part of the casting, is generally easy to detect, and does not often get beyond the initial inspection at the sand blast. The section of the casting may, however, be sufficiently heavy completely to conceal the sand. To detect this occurrence, the inspector must know that the particular impression intended to have been made by the core does not exist in the form designed. In that case he should examine the casting thoroughly to ascertain where the core fragments have found lodgment. If he is unable to locate them, he may conclude that they were washed into a riser and out of the casting proper.

If the location and design of the core impression, which may be solid metal in the absence of the core, are such that it can be formed by chipping, that operation may be performed. If this is not possible, and the desired cavity can be milled or otherwise machined out, the casting may, in carelessly regulated foundries, go to the customer with the fond hope that he will raise no great objection because of the additional labor thus imposed upon him.

Assuming that the purchaser is either good-natured or needs the casting badly, he will start machining it. After spending considerable time, he is quite apt to discover a missing section of the core for which the inspector was searching. To prevent this circumstance, it is far better to assume that the casting is defective when the absence of the core is discovered. This is usually done, and complaints from customers on this score are rare.

Misrun—Wrongly Ground

WHILE widely separated as to cause, the castings bearing the defects mentioned above are similar in effect. The misruns that escape detection are most frequently in castings on which small bosses or projections have not been fully formed. To all appearances they may be correct in height, yet lacking in the necessary finish. This condition can be duplicated by grinding more material from the casting at these joints

than should be removed. A boss may not appear on the finished casting, either because it did not run or because it was ground flush with the surface. In either case nothing but a definite knowledge that the boss should exist will prevent the inspector from considering the casting complete.

Warped Castings

THERE are some types of castings that are seldom straight as they come from the mold. Little attention is given this until after the casting has been heat treated, for if it is to be straightened the cooling strains that caused it to warp must first be relieved by the readjustment of grain structure, obtained in annealing or normalizing. There are cases where the shape of the casting permits straightening in the heat-treating oven. This is done by so placing it upon the oven truck that, when softened by the heat, it will sag, either because of the weight upon it or because of its own weight, into its correct alinement.

Most frequently, however, castings are straightened under a press by forcing the misalined sections into position. In the absence of templates the success of this operation is dependent upon the judgment of the press operator in exerting the amount of force required, and no more. Here, as in other operations, familiarity with the casting determines largely the degree of accuracy to be obtained. The casting may appear correct to the pressman and inspector, yet lack conformity with the design by a fraction of an inch, and cause trouble for the user.

Castings of moderate length and relatively thin section are often bent out of shape in shipment. Some customers, however, fail to appreciate this possibility. Production work susceptible to this trouble should invariably be gaged by a template to determine its condition, and should, if possible, be so loaded that the disturbances incidental to shipment cause no distortion.

Castings ordered in small lots must be straightened by relying upon the eye, and cannot be so uniformly satisfactory as to correct alinement as those to which a gage may be applied.

Occasionally there are castings that uniformly take a definite amount of warpage in cooling. If the design permits, the pattern may be deliberately thrown out of alinement to such a degree that, when the warp occurs in cooling, the casting will have its members in proper relative position.

Cracks of Various Kinds

HAIRLINE cracks, and those existing in recesses not susceptible to careful examination, are occasionally found in returned castings. Their causes are strains set up in cooling and inclusions in the metal. These strains may result from the design of the casting. If the scale from heat treatment is removed by blasting, the fine cracks are usually discernible, but their discovery at times requires very close inspection.

Unless the design of the casting is such that the cracking is beyond control, a knowledge of the existence of this trouble can usually bring about its elimination if the metal is free from inclusions. The use of chills will increase the speed of cooling at the point of application and cause the strain to be transferred to some position capable of withstanding its force. Such a strain is eliminated in the heat treatment.

Brackets placed over a section prone to crack occasionally will, by freezing first, hold the metal together under the strains of cooling. A change in gating or heading arrangement, affecting the temperature of the susceptible section, often proves to be the remedy. Unrestricted contraction is frequently permitted by shaking out the casting as soon as it has set sufficiently. This may be accompanied by the breaking of cores that do not yield readily enough to the contraction of the metal around them to allow the casting to contract without excessive strain.

Conclusion

THE foregoing explanations are but sketches of conditions that would require, for comprehensive treatment, much more space than can be appropriately

given in a paper of this kind. Each step in the production of a steel casting is beset with many possibilities of error. Slight variations in the quality of the materials required may cause many of the defects here noted. With ample equipment, the finest materials procurable, and exacting supervision, the menace of that uncertain and highly important factor, the human element, lurks in the shadow of each operation of the steel foundry.

Time is too short to recount all the costly errors that can be committed by foundry workmen, such as the melter's rushing the last heat, the sand-mill man's guessing at the amounts of ingredients used for facing, the molder's forgetfulness in the use of a vent, his carelessness in substituting heap sand for facing, his poor judgment in providing an excessive or inadequate number of chills, his thoughtlessness in employing risers unsuitable for the castings, his indifference in setting a broken core or in placing a core upside down, and other details of wide variety and far-reaching effect.

The sand blast man skims the corners; the grinder grinds too little or too much; the welder smears welds; the chipper fails to clean his castings; the oven man lets his burners run themselves; the mill man runs the tumbling barrel too long and mutilates the castings; the inspector misses what he should catch; and the shipper ships them wrong.

It is not a rosy picture, and its pessimistic cast may be considered by some an exaggeration. Yet there

are days when these things happen, as the conditions under which castings must be produced now provide an infinite number of opportunities for the creation of a defective piece. The situation has reversed itself in the last decade. From the skilled mechanic molding with a minimum amount of supervision, we have come to the semi-skilled workman requiring guidance.

The solution of the problem of supplying steel castings free from defects lies in unremitting, intelligent direction. Group foundries maintain intensive technical cooperation for the purpose of determining facts and exchanging experiences relating to improved practices. This is a collective function. Effective supervision must be maintained as a duty of the individual foundry. In the research group plants this is supplemented to very practical advantage by the exacting, unprejudiced, periodic examinations of castings ready for shipment by the director and his assistant. These men, by specific authority of the chief executives of the associated companies, unreservedly criticize any foundry employees found derelict in the preparation of castings for shipment. In this way the chief inspectors of the affiliated plants are under the general supervision of men qualified by long experience to pass upon the suitability of the product. This arrangement causes all concerned in the technical cooperation to be jealous of the reputation of their associates. The use of group inspection standards for more than five years has had marked influence in reducing complaints regarding defects such as have been discussed.

NEW TRADE PUBLICATIONS

Dimension and Load Bulletin.—Hyatt Roller Bearing Co., Newark, N. J. An illustrated booklet of 14 pages and cover giving data as to the loads which can safely be carried by bearings of all types.

Cold Drawn Steel.—Moltrup Steel Products Co., Beaver Falls, Pa. A booklet of 96 pages and cover, illustrated, listed as catalog No. 1, giving complete details regarding the various products of this company, which include cold drawn steel, turned and polished steel, machine keys, machine rack and flattened steel plates. The booklet contains a great deal of data of interest to the steel buyer.

Night Lighting.—Crouse-Hinds Co., Syracuse, N. Y. Illustrated circular showing the various uses, including many in the industrial field, to which the company's floodlight projectors may be put.

Pumping Engines.—Wilson-Snyder Mfg. Co., Pittsburgh. An 8-page illustrated bulletin on Wilson-Snyder pipe line pumping engines.

Meters.—Sangamo Electric Co., Springfield, Ill. Bulletin No. 71, 20 pages, illustrated, giving instructions to users of Sangamo type D-5 watt-hour meters. These instructions cover installation, inspection, connections, maintenance and other points of value to know.

Valves.—Homestead Valve Mfg. Co., Homestead, Pa. Catalog No. 33, illustrated, 52 pages and cover, giving pictures and details regarding the regular Homestead line, with some important changes in lists and several additions to the line which have been developed during the past year. Some of the new developments are a round-way valve made of acid resisting metal, also semi-steel with a lubricating device for various services; a combination Hovalco-Homestead blow-off valve made of cast steel with monel metal parts for high boiler pressure. The Homestead protected seat hydraulic operating valve with flanged connections is also listed for the first time in this catalog.

Carbonizing Machines.—American Gas Furnace Co., Elizabeth, N. J. Four-page illustrated leaflet showing how carburizing costs may be reduced by the use of American rotary (retort type) carbonizing machines. A large illustration shows a battery of 23 of these machines in the plant of the Timken Roller Bearing Co., Canton, Ohio.

Automatic Tool Room Machine.—Keller Mechanical Engraving Co., 70 Washington Street, Brooklyn. Eight-page illustrated pamphlet on the type BL Keller automatic tool room machine for die and tool making. The machine is especially adapted to the production of dies for blanking, trimming, embossing, forming, punching, forging and molding; punches, pressure pads, cams, templates, gages, jigs, form cutters, metal core boxes, patterns, match plates, etc.

Centrifugal Pumps.—Dean Hill Pump Co., Anderson, Ind. Circular No. 402, illustrating and describing the construction of the company's double suction centrifugal pumps.

Industrial Silencer.—Maxim Silencer Co., 87 Homestead Avenue, Hartford, Conn. Leaflet illustrating and showing purposes to which the Maxim industrial silencer may be put, such as quieting ear-splitting exhaust noises. The silencer employs the same principle as that which is used with firearms.

Mine Pumps.—De Laval Steam Turbine Co., Trenton, N. J. A 20-page leaflet giving information as to the selection and application of centrifugal pumps to mine pumping. Instructions are given for the design of piping and the calculation of friction head power required. Details of construction which should be looked into when selecting pumps for this service are discussed at length.

Precision Ball Bearings.—Norma-Hoffman Bearings Corporation, Stamford, Conn. Folder on precision ball bearings for fractional horse power motors.

Slotters.—T. C. Dill Machine Co., Somerset, Mascher and Mutter Streets, Philadelphia. Two booklets dealing with Dill slotters, one giving illustrations of the machines with specifications, and the other showing by illustrations and descriptions the various kinds of work which has been done successfully in manufacturing plants on Dill slotters.

Hi-Lift Electric Hoist.—Northern Engineering Works, Detroit. Bulletin EH-101 describes briefly a new crane trolley, of capacity 1 to 4 tons, designed for use where head room is limited. The trolley was described on page 1280 of our issue of May 6.

Employee Magazines.—Policyholders' Service Bureau, Metropolitan Life Insurance Co., New York. Report No. 74, 20 pages, 8 1/4 x 10 1/4 in., illustrated. Outlines mechanical structure of the employee magazine, the contents of the magazine, its layout and its distribution, the duties of the editor. The report is based on the best practice used by group insurance policy holders of the Metropolitan company who issue employee magazines, and on general industrial practices.

Machinery Markets and News of the Works

1926 SALES SHOW A GAIN

Machine Tool Buying in First Half Ahead of Same Period Last Year

June Business Ahead of Expectations in Some Instances and Prospects Are Regarded Optimistically

MACHINE tool sales in the first six months of 1926 will show a gain over those of the first half of last year, according to statements by some of the leading machine tool manufacturers. In some cases the gain averages 25 per cent. In not a few instances the first half of this year is also running ahead of the last six months of 1925. The outlook for the remainder of the year is generally considered favorable.

The automotive industry has been the most important source of new business. Railroad orders, while fairly good, have not come up to expectations. A large

gain has been recorded in the sales to general industrial buyers.

Recent business has included fairly large orders from the Otis Elevator Co., New York; the International Motor Co., Plainfield and New Brunswick, N. J., and Allentown, Pa.; the American La France Fire Engine Co., Bloomfield, N. J.; International Harvester Co. for Rock Island, Ill., and the Chevrolet Motor Co.

The Illinois Central has been prominent among railroad buyers. Cincinnati builders have received orders for several planers and 11 radial drills. The Atlantic Coast Line is expected to place orders this week against a fairly large list issued several weeks ago. The Burlington is asking for prices at Chicago on about a dozen heavy tools.

School equipment figures largely in the Boston market. Bids were closed on June 24 on a large list, including 24 motor-driven lathes, for technical schools in that city, and bids will be in by July 1 on another list of 48 machines. Awards will be made some time in July.

New York

NEW YORK, June 29.

ALTHOUGH there has been some falling off in machine tool sales during June, conditions are more satisfactory than usual for this time of year. There has been some fairly large buying throughout the month, especially by the Otis Elevator Co., New York, and the International Motor Co., the latter having bought for all three of its plants, at Plainfield and New Brunswick, N. J., and Allentown, Pa. The American La France Fire Engine Co., Bloomfield, N. J., has just placed orders for 10 or 12 machines. Scattering orders for single machines have been in fair number. Reports reach New York that the Atlantic Coast Line, which issued a large list several weeks ago, has started to place orders. Among the miscellaneous orders of the week are the following: Illinois Central Railroad, two car wheel borers and an axle lathe; another Western road, a 48-in. x 12-ft. planer; a Chicago company, an axle lathe; a Chicago company and also one at Milwaukee, an automatic milling machine; a Detroit automobile company, two automatic milling machines; a St. Louis railroad, a vertical shaper; a Detroit automobile company, two worm gear grinders; a Rockford, Ill., company, a thread milling machine; a Waterbury, Conn., manufacturer, three single-spindle drilling machines; another Waterbury company, a vertical shaper; the Brooklyn Edison Co., a 16-in. geared-head lathe; a Hollywood, Cal., company, two Lincoln-type milling machines; a company at Kohler, Wis., a 16-in. geared-head lathe; General Electric Co., West Lynn, Mass., a vertical shaper.

Bids will be received by Thomas F. Farrell, commissioner Canals and Waterways, State Public Works Building, 353 Broadway, Albany, N. Y., until July 19 for one Diesel engine-driven centrifugal pump, and one Diesel engine-driven generator, for use at the Barge Canal Terminal, Syracuse, N. Y. (Estimated cost \$62,000).

The New York Central Lines, W. C. Bower, manager of purchases and stores, 466 Lexington Avenue, New York, are asking bids until July 7 for a quantity of steel wheels, serial contract No. 15-1926.

The New York Edison Co., 130 East Fifteenth Street, New York, has plans for a three-story power distributing station, 18 x 85 ft., at 118 West Fifty-third Street, estimated to cost \$75,000 with equipment. William Whitehill, 709 Sixth Avenue, New York, is architect.

The Brooklyn Union Gas Co., 176 Remsen Street, Brooklyn, will erect a two-story gas-pumping station, 50 x 190 ft., at 247-85 Maspeth Avenue, to cost about \$200,000 with main units and accessories.

The Board of Education, Newburgh, N. Y., plans the installation of manual training equipment in its proposed three-story high school at South Street and Fullerton Avenue, estimated to cost about \$250,000, for which bids are being received on a general contract. A. F. Gilbert, 358 Fifth Avenue, New York, is architect.

The International Plumbing Co., Tivoli Street, Albany, N. Y., has plans for a two-story and basement storage and distributing plant, with pipe-cutting, threading and other departments, to cost approximately \$125,000 with equipment.

The New York Steam Corporation, 280 Madison Avenue, New York, has taken out a permit for the erection of its proposed one-story steam power plant, 150 x 188 ft., and 145 ft. high, to cost \$2,500,000 with machinery. The company recently disposed of a bond issue in amount noted to carry out the project. Thomas E. Murray, Inc., 55 Duane Street, is engineer. James D. Hurd is president.

In connection with general power and operating machinery to be installed at its Hell Gate power plant, Bronx, the United Electric Light & Power Co., 130 East Fifteenth Street, New York, has placed an order with the American Brown-Boveri Electric Co., New York, for a turbo-generator unit with rating of 160,000 kw. The construction will be handled at the company's plant at Camden, N. J., formerly the works of the New York Shipbuilding Co., and is expected to require from 20 to 24 months for building and installation.

Gode Brothers, 9149 118th Street, Richmond Hill, L. I., operating a machine and repair works, have asked bids on a general contract for a one-story addition, 90 x 100 ft. H. T. Jeffrey, Jr., 155 Jamaica Avenue, Jamaica, N. Y., is architect.

The Tide Water Oil Co., 11 Broadway, New York, has begun an expansion and improvement program at its refinery at Bayonne, N. J., to be carried out during the next twelve to eighteen months, to cost approximately \$5,000,000. The work will include remodeling of present buildings

and equipment, with installation of considerable additional refining and auxiliary machinery. The company is a subsidiary of the Tide Water Associated Oil Co.

Thomas Paterson, 1 Madison Square, New York, architect, will soon ask bids on a general contract for a two-story automobile service, repair and garage building, 120 x 142 ft., at Jersey City, N. J., to cost \$75,000 with equipment.

Charles P. Gillen, director Department of Parks and Public Property, Newark, N. J., is asking bids until July 6 for fuel-saving equipment for six boilers in the Center Market. Specifications on file at office noted, City Hall.

The L. J. Wing Mfg. Co., Victoria Street, Newark, manufacturer of fans, mechanical blowers, etc., has awarded a general contract to Sutherland-Allen, Inc., for its one-story addition, 60 x 150 ft., to cost close to \$50,000. Fletcher-Thompson, Inc., 415 Lexington Avenue, New York, and Bridgeport, Conn., is architect and engineer.

The Board of Education of the Essex County Vocational Schools, 969 Broad Street, Newark, is asking bids until July 6, for equipment and supplies for different school departments, including machine tools, hand tools, automobile mechanical equipment, electrical and carpentry department supplies, lumber, steel and iron, drawing materials, etc.; specifications at office noted. Robert O. Beebe is director.

The Weyerhaeuser Timber Co., 220 Broadway, New York, with headquarters at Tacoma, Wash., is completing plans for the early construction of a new storage and distributing plant at Port Newark, Newark, N. J., site acquired from the city, to include the installation of conveying, hoisting, loading and other equipment.

The Weber & Scher Mfg. Co., 263 Sussex Avenue, Newark, manufacturer of machinery and parts, has filed plans for a one-story machine shop addition to cost about \$23,000.

The Cornish Co., Washington, N. J., manufacturer of talking machines, radios and kindred equipment, has disposed of its plant and adjoining property on West Washington Avenue to John J. Farrell, Newark, and associates, who propose to use the site for a hotel and apartment structures. The Cornish Co. will continue present occupancy for six months and is reported to be contemplating the erection of a new plant in another part of the city.

The Hills-McCanna Co., Chicago, manufacturer of lubricators, pumps and non-ferrous alloys, has opened an Eastern sales office at room 704, 53 Park Place, New York, in charge of F. R. Glenner.

The M. O'Neil Supply Co., Flushing and Onderdonk Avenues, Borough of Queens, New York, will build a plant consisting of an assembly shop and a pipe storage shed. Contract for the construction has been let to the Ballinger Co., Philadelphia and New York. The assembly shop will be 75 x 175 ft. and the pipe storage shed will be 100 x 283 ft. The company is a distributor of pipe and fittings.

The Heating Plant Combustion Engineering Co., 7-9 Watchung Avenue, Plainfield, N. J., has been incorporated with capital stock of \$50,000, and will distribute heating plant equipment and appliances. It is interested in making connections with manufacturers of such equipment. George S. Kent is president.

The Industrial Machine & Equipment Co., with office and warehouse at 39 Hamilton Street, Newark, has been organized to deal in new and used machinery. It will also act as appraiser and liquidator.

Buffalo

BUFFALO, June 28.

WORK has been started by the Buffalo Electro-Chemical Co., Buffalo, on its proposed plant on the River Road, Tonawanda, N. Y., for the production of hydrogen peroxide under a patented electrolysis process. The initial unit will be one and two stories and is reported to cost approximately \$250,000 with machinery. The company was organized recently as a subsidiary of the Hydrox Chemical Co., 225 West Huron Street, Chicago. Charles A. Buerk is president of both organizations. It is purposed to have the new plant ready for service early in 1927.

The Rand Kardex Bureau, North Tonawanda, N. Y., operating the Safe Cabinet Co., Marietta, Ohio, is reported to be considering the erection of a four-story addition to the Marietta works, to cost close to \$150,000 including equipment. Schenck & Williams, Third National Bank Building, Dayton, Ohio, are architects.

The Houde Engineering Corporation, 1392 West Avenue, Buffalo, manufacturer of automobile equipment, has awarded a general contract to the George W. Butler Co., 408 Pearl Street, for a two-story unit, 75 x 120 ft., estimated to cost \$75,000, to be used for administration and other operating service. G. M. Wolfe, 1377 Main Street, is architect.

The S. Snyder Corporation, Rochester, dealer in iron and steel, has acquired the former distillery of the A. McGinnis

Co., Carrollton, Md., and will dismantle the machinery and raze the structures.

The Iroquois Electric Refrigeration Co., Buffalo, recently organized by officials of the Barber Asphalt Co., Land Title Building, Philadelphia, as a subsidiary, will occupy a portion of the plant of the parent company at 178 Walden Avenue, for the manufacture of electric refrigerating units.

The Department of Public Works, Rochester, is said to be planning the installation of pumping machinery in connection with proposed extensions in the municipal waterworks to double approximately the present supply of 30 million gal. daily. Hazen & Whipple, 25 West Forty-third Street, New York, consulting engineers, are making preliminary surveys. C. A. Poole is city engineer.

The Hewitt Rubber Co., 240 Kensington Avenue, Buffalo, manufacturer of rubber transmission belting, air brake hose, and other rubber goods, is disposing of a preferred stock issue to aggregate \$1,000,000, a portion of the fund to be used for plant expansion, including additional equipment. The company recently acquired the Gutta Percha & Rubber Mfg. Co., New York, manufacturer of kindred mechanical rubber products, and will operate as a subsidiary. John H. Kelly is president.

The Pass & Seymour Co., Solvay Station, Syracuse, N. Y., manufacturer of electrical specialties, has plans for an addition and improvements in different departments, reported to cost about \$25,000. Guy Noble, Union Building, is architect.

The Allen Automatic Tag Machinery Corporation of America, whose temporary address is Dansville, N. Y., has been organized with capital stock of \$300,000 to manufacture automatic tag-making machinery. The company is seeking a desirable location and when this has been decided upon it will be in the market for materials and equipment. S. E. Allen is president.

The H. A. Smith Machinery Co., Syracuse, N. Y., is now exclusive representative in the central New York territory for the Cleveland Planer Co. open-side planers.

Detroit

DETROIT, June 28.

BIDS have been asked by the Chevrolet Motor Co., Detroit, for a one-story addition to its plant at Bay City, Mich., 60 x 130 ft., to be equipped primarily for heat-treating. It is estimated to cost \$75,000. Wright & Nice, 4339 South Saginaw Street, Flint, Mich., are architects.

A merger has been completed between the Frederick C. Mathews Co., Detroit, manufacturer of advertising signs, etc., Process Metal Stamping Co., Detroit, manufacturer of metal signs, and the St. Thomas Metal Signs, Ltd., St. Thomas, Ont. The consolidated organization will be known as the Mathews Industries, Inc., with invested capital of about \$1,000,000. Plans for expansion are under consideration.

The Detroit Edison Co., 2000 Second Avenue, Detroit, has submitted a schedule of proposed extensions and operations for the remainder of the year and early part of next year to the State Public Utilities Commission. A fund of about \$7,500,000 will be expended at the Trenton Channel plant, \$2,979,000 at the Marysville power plant and \$1,185,000 at the Connor's Creek and Delray power plants. Substations are estimated at \$6,836,000, and for underground conduits, \$6,500,000. The company will also make enlargements and improvements at its steam heating power plant to cost \$2,660,000. Application for permission has been made for a bond issue of \$15,000,000, the majority of the fund to be used in connection with the projected expansion.

Smith, Moss & Mitschke, Union Trust Building, Detroit, architects, have plans nearing completion for a new one and two-story automobile service, repair and garage building on Grand River Avenue, to cost \$110,000 with equipment.

The American Enamel Products Co., Mount Clemens, Mich., is purchasing equipment for its proposed local plant, formerly the works of the Transport Truck Co., now being remodeled to accommodate the new line of manufacture. The installation is estimated to cost in excess of \$50,000.

The Oakland Motor Car Co., Pontiac, Mich., has awarded a general contract to the Austin Co., for a new plant unit consisting of three one and two-story buildings, and power plant, to be devoted exclusively to the production of Pontiac Six automobiles. The main structure will be two-stories and basement, about 150 x 1300 ft., to be devoted to assembling operations; the second unit will be 450 x 900 ft., designed for car storage and shipping, parts department, etc.; and the third unit, 375 x 700 ft., will be equipped for the manufacture of six cylinder engines and parts. The entire plant will cost about \$5,000,000, and will have a rated capacity of 1000 complete cars per day. The present Oakland plant, heretofore given over both to Oakland Six and Pontiac Six automobiles, will be devoted exclusively to the first noted,

The Crane Market

THE volume of crane inquiry before the market has shown but little increase in the past week. In the overhead field, however, there are still a number of important inquiries open, several of which are expected to close shortly. The New York Edison Co., through Thomas E. Murray, 106 Duane Street, New York, is reported to have issued a further small inquiry for overhead equipment in the East Fourteenth Street power station. The International Paper Co., 100 East Forty-second Street, New York, which has a list of hand power or electric cranes pending for a Canadian plant and a 7½-ton hand power crane for Bastrop, La., has asked for prices on a 40-ton hand power crane with alternate prices on electric. The General Electric Co., in the market for two large cranes for Buffalo and one for Schenectady, in addition to several small electric cranes for West Philadelphia, is expected to close shortly. The American Smelting & Refining Co., New York, is about to close on a 10-ton overhead crane for Chihuahua, Mexico.

In the Chicago district the R. C. Wiebolt Co., Chicago, is inquiring for a list of cranes including one 15-ton, 63-ft. span, two 10-ton, 27-ft. span and two 3-ton, 27-ft. span overhead electric cranes.

following the completion of the new plant, with a rating of 600 complete cars per day. It is said that the new Pontiac plant may be extended in 1927 if conditions warrant. A. J. Brandt is vice-president of the Oakland company, in charge of operations.

Weldmarier & Gay, Metropolitan Building, Detroit, architects, will soon ask bids for the erection of a one-story automobile service, repair and garage building, 156 x 220 ft., to cost \$150,000 with equipment.

The Universal Products Co., 458 East Woodbridge Street, Detroit, manufacturer of automobile parts, has plans for a new two-story plant at Fordson, formerly River Rouge, to cost about \$100,000 with machinery. J. B. Flick is president.

The Murray Body Corporation, Detroit, manufacturer of automobile bodies, will establish an automobile body plant at Indianapolis and has contracted for the use of a building containing 400,000 sq. ft., formerly occupied by the Marmon Motor Car Co. Charles H. Widman is vice-president.

The Gibb Welding Machine Co., Bay City, Mich., manufacturer of electric arc, spot, and seam welders, broke ground June 10 for an addition to its factory which will more than double the present floor space.

The Buhr Machine Tool Co., Ann Arbor, Mich., has purchased the patterns, drawings, etc., of the Blodgett Engineering Co. from the receiver, the Detroit Trust Co.

Philadelphia

PHILADELPHIA, June 28.

PLANS have been filed by the Abrasive Co., Fraley and Tacony Streets, Philadelphia, manufacturer of grinding materials, for a one-story addition to cost about \$23,000.

I. W. Levin, 1011 Chestnut Street, Philadelphia, architect, has plans in preparation for a three-story automobile service, repair and garage building, 65 x 115 ft., estimated to cost \$160,000 with equipment.

Ovens, power equipment, conveying and other machinery will be installed in the proposed new plant to be erected at Philadelphia by the Ward Baking Co., 367 Southern Boulevard, New York, to cost \$350,000. It is understood that plans will be drawn by C. B. Comstock, 110 West Fortieth Street, New York, architect and engineer.

The Board of Trustees, Drexel Institute of Art, Science and Industry, Thirty-second and Chestnut Streets, Philadelphia, has secured a fund of \$50,000, the entire amount to be expended for mechanical and power equipment for shop and classroom instruction. It is expected to arrange for the purchases during the summer.

Arthur Mikelberg, Philadelphia, has awarded a general contract to Israel Farbstein, 917 Rittner Street, for a one-story mechanical shop at 2325-31 Fairmount Avenue, to cost about \$31,000 with equipment.

H. D. Justi & Son, Franklin Trust Building, Philadelphia, manufacturers of dental equipment and supplies, have acquired the two and one-half story factory at 4527-29 Hedge Street for expansion. The present works are at Spring Garden and Thirty-second Streets.

The Pennsylvania Railroad Co., Broad Street Station, Philadelphia, has authorized the installation of smut-clearing machinery and auxiliary apparatus for treatment of wheat in its grain elevator at Girard Point.

Among recent purchases are:

Tannin Corporation, 100 East Forty-second Street, New York, two 5-ton and one 10-ton electric traveling cranes for a plant near Baltimore from an unnamed builder.

Nekoosa-Edwards Paper Co., Port Edwards, Wis., a 30-ton locomotive crane from the American Hoist & Derrick Co.

Chicago, Rock Island & Pacific, an electric drop pit table for Burr Oak, Ill., from the Whiting Corporation.

Hamlon Gregory Galvanizing Co., Pittsburgh, a 12-ton locomotive crane from the Orton Crane & Shovel Co.

United States Gypsum Co., 205 West Monroe Street, Chicago, a 30-ton crawl-tread locomotive crane from the Orton Crane & Shovel Co.

Chicago & North Western Railroad, Butler, Wis., a 1½-cu. yd. bucket handling crane from a Wisconsin builder.

Belle City Malleable Iron Co., Racine, Wis., a 7½-ton electric traveling crane from a Wisconsin builder.

Canadian Import Co., Montreal, a 15-ton used Brownhoist locomotive crane from A. R. Gelinas, Montreal.

Irwin T. Catharine, Franklin Trust Building, Philadelphia, architect, has plans under way for a five-story automobile service, repair and garage building, 100 x 100 ft., at 924-26 Spring Garden Street, to cost \$185,000 with equipment.

The Atlantic Refining Co., 260 South Broad Street, Philadelphia, oils, is planning for the early reconditioning of three tankers, to be equipped with Diesel engines and complete electrical equipment for operation in transatlantic service. The tankers were recently purchased from the United States Shipping Board.

Properties of the Hoopes & Townsend Corporation, and the Hoopes & Townsend Steel Co., Broad and Buttonwood Streets, Philadelphia, have been sold by Walter C. Douglas, Jr., receiver, to Joseph J. Greenberg, Philadelphia, and associates, on a bid of \$710,000.

Henry B. Robinson, Franklin Trust Building, Philadelphia, machinery dealer, has awarded a general contract to the Nelson-Pedley Co., Corn Exchange Building, for a one-story storage and distributing branch at Sixth and Everett Streets, Camden, N. J., 150 x 210 ft., to cost \$80,000. Material handling and conveying equipment, etc., will be installed.

Frederick Soreglia, 6042 Elmwood Avenue, Philadelphia, and associates are considering plans for a four-story automobile service, repair and garage building, 70 x 140 ft., at 522-26 Spruce Street, to cost approximately \$100,000 with equipment.

The Boyertown Burial Casket Co., Boyertown, Pa., is reported to be considering an addition to cost approximately \$30,000 with equipment. It will be used in part to replace a recent fire loss.

Walker Brothers, 620 South Delaware Avenue, Philadelphia, manufacturers of electrical equipment, have acquired the factory of the Philadelphia Terra Cotta Co., Spring Mill, near Conshohocken, Pa. The present plant will be enlarged and the Philadelphia business removed to the new location and operations placed under way in September. The company will specialize in the production of steel tubing and other steel and iron products used in electrical construction.

The Christian B. Daring Paper Mfg. Co., Bridgeport, Pa., has plans under way for extensions and improvements, including the installation of additional equipment, estimated to cost \$35,000.

The West York Borough School Board, York, Pa., Harry Lauer, 1338 West Market Street, president, is considering the installation of manual training equipment in its proposed two-story junior and senior high school at Philadelphia and Clinton Streets, to cost about \$250,000. Witman & Boyer, 47 East Market Street, are architects.

Whitney-MacDonald, Inc., 2320 East Tioga Street, Philadelphia, has changed its corporate name to the MacDonald Corporation. The company makes welded headers, pipe bends, etc., and installs complete piping systems. Robert H. Booth is vice-president and general manager.

The Electro-Sherardizing Co., 1743 North Randolph Street, Philadelphia, has been reorganized with new officers as follows: M. J. Greenhalgh, president; R. R. Robinson, vice-president, and H. Greenhalgh, secretary and treasurer. The company was started in 1921 and specializes in dry galvanizing and polishing. It has a capacity of 30 tons per week.

The item in THE IRON AGE, June 17, regarding the Watson Stabilator Co., Philadelphia, properly refers to the John

Warren Watson Co., of the same city, manufacturer of automobile shock absorbers, which recently awarded a contract for an addition to its plant at Twenty-fourth and Locust Streets. The Watson Stabilator Co. of Philadelphia is the retail and wholesale distributor for the John Warren Watson Co., in this district, and does not contemplate the erection of any new plant. The Motorcraft Mfg. Co., Inc., New York, referred to in previous item, has no connection with either of the two companies mentioned, but is the successor to the Watson Stabilator Co. of New York.

New England

Boston, June 28.

LOCAL interest in machine tool circles the past week centered largely in the requirements of the Board of Education for an East Boston school. Bids closed June 24 on 24 14-in. x 6-ft. motor-driven lathes, a wet tool grinder, a 14-in. sensitive drilling machine, a tool-room milling machine, a 16-in. shaper and miscellaneous gas furnace equipment. Bids will close July 1 on 26 miscellaneous lathes in addition to two turret lathes, two high-speed lathes and a bench lathe, eight milling machines and nine grinding machines, a total of 48 machines. Awards will be made some time in July. One local house has sold close to 30 new and used tools, including plain cylindrical grinding machines, Brown & Sharpe and Milwaukee milling machines, five shapers and several new radial drills. The largest single sale was a carload of tools to an Indiana plant.

New England machine tool builders report a falling off in new business, but most of them have sufficient orders booked to maintain present plant operations for some time.

The Automatic Radio Mfg. Co., Inc., has leased the sixth floor at 332 A Street, South Boston, for manufacturing purposes. It has under consideration the purchase of small equipment.

The Morton C. Tuttle Co., Boston, has closed a contract with the Bates Valve Bag Co., Chicago, to erect a manufacturing plant, 80 x 240 ft., at Covington, Va. Plans will be furnished by owner. Miscellaneous mechanical and electrical equipment will be required.

The executive offices of the Russell & Erwin division, American Hardware Corporation, New Britain, Conn., have been moved to new quarters on Washington Street.

The Monitor Controller Co., Baltimore, manufacturer of automatic controllers and electrical resistors, has opened a branch office at room 417, 136 Federal Street, Boston, in charge of Nelson A. McCoy.

The Cameo Oil Burner Mfg. Co. is the new name of the business formerly operated as the Federal Oil Burner Mfg. Co., Bridgeport, Conn. All contracts have been made for the manufacture of the burner.

The General Electric Co., Boston Avenue and Bond Street, Bridgeport, Conn., has plans for additions and improvements in its local plant, including alterations in U-shaped building, 95 x 112 ft. Additional equipment will be added.

H. G. Austin, Board of Trade Building, Boston, has relinquished the New England agency for the Thomas Sheet Steel Co., Niles, Ohio, and has taken on the agency for the line of sheets made by the Apollo Steel Co., Apollo, Pa.

The Cumberland County Power & Light Co., Portland, Me., is disposing of a bond issue of \$9,000,000, a portion of the proceeds to be used for extensions in power plants and system. H. M. Verrill is president.

Motors and other power equipment, conveying machinery, etc., will be installed in the two-story L-shaped addition to be constructed at the printing plant of the Conde Nast Co., Sound Beach, Conn., with one wing, 40 x 150 ft., and the other, 88 x 88 ft., to cost approximately \$100,000. William Higginson, 15 Park Row, New York, is architect.

Under a plan of reorganization of the American Writing Paper Co., Holyoke, Mass., a new company is being organized to take over and operate 16 of the 28 mills of the present company, now in receivership. The plants to be retained are valued at \$10,500,000 and the others at \$3,300,000. It is purposed to dispose of the 12 plants within 24 months for about \$1,400,000, and during this time it is expected to make extensions and betterments at the 16 mills, including machinery installations and replacements, to cost \$1,250,000, according to recommendations of Sidney L. Willson, receiver for the present organization. To provide funds for expansion, equipment and operations, the new company proposes to issue preferred stock in amount of \$9,000,000, bonds for \$5,000,000, and notes for \$1,000,000.

The First National Stores, Inc., Mystic and Middlesex Avenues, Somerville, Mass., M. O'Keeffe, president, is completing plant for the early construction of a one and two-story storage and distributing plant, with conveying, elevating and other handling machinery. The structure will approximate 500,000 sq. ft. of floor space and is estimated to cost \$2,000,000. Monks & Johnson, 99 Chauncy Street, Boston, are engineers, in charge.

The Union Electric Light & Power Co., Unionville, Conn., is arranging for a stock issue to total \$85,000, a portion of the fund to be used for expansion and improvements. E. H. Deming is president.

The Department of Public Works, Boston, is reported to be planning the construction of a new pumping plant for the municipal water system at East Boston, estimated to cost \$500,000.

The City Council, East Providence, R. I., is considering the construction of a one-story municipal service, repair and garage building for city-owned automobiles and motor trucks, to cost about \$50,000 with equipment.

The Worcester Electric Light Co., Worcester, Mass., has plans for a new water-conditioning plant for power station service at 59 Webster Street, estimated to cost \$25,000.

The Boson Elevated Railway Co., 31 St. James Avenue, Boston, has awarded a general contract to the Simpson Brothers Corporation, 77 Summer Street, for its proposed two-story automobile service, repair and garage building, 50 x 145 ft., at Somerville, Mass., estimated to cost \$225,000 with equipment.

Cincinnati

CINCINNATI, June 28.

MACHINE tool sales the first six months of this year showed a substantial increase over those in the same period in 1925, according to local builders. It is estimated that the gain averages approximately 25 per cent. In fact the volume of business the first half of this year has been slightly ahead of that in the last six months of last year. At least five large machine tool manufacturers state that their sales this year have been above the standard they regard as normal.

Undoubtedly the automotive industry has been the most important source of machine tool business. In some cases orders from that field constitute as high as 50 per cent of the total. Improvement in the number and the size of sales to general industrial buyers has been the outstanding encouraging feature. Railroads have contributed a comparatively small portion of the total bookings, while the electrical and textile industries have bought little of consequence.

Although production has tapered off locally in the past two months, there is scarcely a machine tool builder who has any tools in stock. Operations have conformed strictly to orders in hand. Some manufacturers are now making machines for stock, but they are relatively few.

There is a difference of opinion among builders in regard to the outlook for business during the last half of the year. However, the majority believe that in September buying of tools again will attain sizable proportions. While the automotive industry is expected to yield a large amount of business in the fall, it is acknowledged that the extent of automotive purchases will depend considerably upon market conditions in that industry in the next two months.

The Illinois Central has closed for several planers and 11 radial drills with local builders, but has a number of lathes yet to place.

The Delco Light Co. has bought a small amount of equipment, but will not purchase the bulk of its tools for its new plant at Moraine City, Ohio, until later. The Chrysler Motor Corporation is understood to have contracted for three axle-turning lathes. The Chicago, Rock Island & Pacific Railroad has taken a 48-in. x 12-ft. planer from the Niles-Bement-Pond Co. Another sale made by the latter company consists of two 48-in. carwheel borers and a No. 3 axle lathe to the Illinois Central. A company at Chrome, N. J., bought a Long & Allstatter riveting machine, and a school on the Pacific Coast has purchased a screw machine. A Chicago foundry has bought a No. 5 Newark gear cutter, while a company at Clewinton, Fla., closed for a 20-in. shaper.

The Kuhns Brothers Co., Dayton, Ohio, has been incorporated with a capitalization of \$375,000 to engage in the

foundry and machine manufacturing business. Incorporators of the company have operated for a number of years a plant on McCall Avenue for the manufacture of cast iron fittings.

The Wrightford Transmission Co., Court and Harriet Streets, Cincinnati, has been incorporated to manufacture three-speed sliding gear transmission for Ford cars. George McG. Morris, Arthur Pletz and Sam Blackburn are the incorporators. The company will occupy part of the building owned by the Morris Machine Tool Co.

C. J. Foerster has been appointed receiver for the John Steptoe Co., 2961 Colerain Avenue, Cincinnati, manufacturer of shapers and lathes. The company will suspend operations July 1 at which time an appraisal of the property will be made. Although no definite decision yet has been reached, it is probable that the company's assets will be liquidated preparatory to going out of business.

Luers, Inc., Cincinnati, has been incorporated to manufacture machine tools and will locate in the old Bruce foundry at 2421 Colerain Avenue. J. Clifford Luers will be the general manager.

The John Van Range Co., Fifth and Broadway Streets, Cincinnati, has plans for a one-story monitor type building, 300 x 500-ft., on Robertson Avenue, for the manufacture of ranges and kitchen equipment. It is understood that part of the building will be four stories. Louis H. Kaiser is president.

The Southern Railway has awarded to Dwight P. Robinson & Co. contract for the design and construction at Chattanooga, Tenn., of a locomotive terminal, consisting of a reinforced concrete roundhouse, machine shop, boiler, smith and tank shop, power house and other buildings. Work will begin immediately.

The Chevrolet Motor Co., Detroit, has plans under way for a two-story addition to its plant at Norwood, Cincinnati, estimated to cost \$400,000 with machinery. Albert Kahn, Inc., Marquette Building, Detroit, is architect.

The Department of Highways and Public Works, Columbus, Ohio, G. F. Schlessinger, director, has plans nearing completion for a two-story and basement municipal automobile service, repair and garage building, 100 x 200 ft., at the State Fair grounds, estimated to cost \$100,000 with equipment. The Ohio Highway Engineers, Ohio-Hartman Building, are engineers.

The Tennessee Electric Power Co., Chattanooga, Tenn., is disposing of a bond issue of \$3,500,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. C. B. Cobb is president.

The United States Cast Iron Pipe & Foundry Co., Twenty-seventh and Bryce Streets, Chattanooga, Tenn., has acquired property in the Tannery Flat section and is reported to be considering the erection of a new foundry. The main plant of the company is at East Burlington, N. J.

The Louisville-Packard Co., Louisville, local representative for the Packard automobile, is completing arrangements for the erection of a new service, repair and garage building to cost \$100,000 with equipment. Clarence J. Stinson, Inter-Southern Building, is architect.

Thomas Henry & Sons, Inc., Tioga Street and Trenton Avenue, Philadelphia, will build a machine shop at its proposed new textile mill at Sixty-third Street and the Centennial Boulevard, Nashville, Tenn., the entire project to cost about \$225,000.

Ovens, power equipment, conveying and other machinery will be installed in the proposed two-story and basement addition, 100 x 120 ft., to be erected by the Ward Baking Co., East Goodale Street, Columbus, Ohio, estimated to cost \$250,000. C. J. Cropp, Berkeley Road, is architect. Headquarters of the company are at 367 Southern Boulevard, New York.

The Board of Education, Lexington, Ky., is considering the installation of manual training equipment in its proposed new senior high school at East Main Street and Walton Avenue, reported to cost \$175,000, for which plans have just been authorized. F. C. Warner and W. R. McCormack, Bulkley Building, Cleveland, are architects.

The Louisville Water Co., 435 South Third Street, Louisville, is said to be planning an early call for bids for a centrifugal pumping unit, with capacity of 40-million gal. per day, for the municipal waterworks. An addition will also be made to the filtration plant. Alvord, Burdick & Howson, 6 South Dearborn Street, Chicago, are engineers.

The Anderson-Tully Co., North Second Street, Memphis, Tenn., is said to be completing plans for a new veneer mill and box-manufacturing plant, to cost about \$200,000 with machinery. C. J. Tully is president.

Chicago

CHICAGO, June 28.

THE week just closed has been considerably more active both in buying and in fresh inquiry than were the previous weeks in June, and it is now the opinion in the trade that June sales will average well up to May. Purchases by the International Harvester Co. and the Illinois Central have swelled order books, and in addition a good number of miscellaneous single tool items are being closed. The Union Pacific has placed several machine tools and the Rock Island and Santa Fe are both active at this time. The Illinois Central has bought most of its large tools which require heavy foundations and is now making arrangements for the light equipment. It is reported that this railroad will soon submit a supplementary list.

Among the milling machines placed the past week were two by the Illinois Central, five by the International Harvester Co. and one by the Speedautomatic Co., Chicago. The United States Quartermaster's Depot, Chicago, is inquiring for a 14-in. x 6-ft. lathe and the Chicago & North Western is asking for prices on a direct-current, motor-driven turret lathe, similar to Gisholt H-21, with 220-volt motor and control and a 52-in. single-head boring mill equipped with a 440-volt, 3-phase, 60-cycle motor and push-button control. The Mather Stock Car Co., is asking for prices on 1-ton and 2-ton chain hoists, 17-ft. lift, in one-half dozen and dozen lots and an air compression riveter for 3/4-in. and 1-in. rivets.

The Burlington has issued the following list and asks that all motors and controls, which are for 440 volts, 3-phase, 60-cycles, be quoted on separately from the machine tools.

Burlington List

One 36-in. heavy-duty crank shaper; direct drive.

Two 36-in. x 36-in. x 10-ft. bed planers; belt driven.

One 42-in. high-duty boring mill; direct drive.

One 16-in. geared-head engine lathe with 48-in. centers; motor driven.

One heavy-duty drill, 3-in. capacity; motor driven.

One 5-ft. radial drill, arranged for motor drive.

One 6-in. x 7-ft. portable boring equipment for cylinders 16-in. to 36-in.; arranged for motor drive.

One 3 1/2-in. x 6-ft. portable boring bar for piston valve bushings 8-in. to 20-in.; arranged for motor drive.

One 36-in. heavy-duty engine lathe, geared head, 10-ft. centers; arranged for motor drive.

One 24-in. x 1 1/2-in. motor-driven tool grinder.

Two vertical punches, 36-in. throat, motor driven.

The Clifford Peterson Tool Co., 123 North Jefferson Street, Chicago, is in the market for a used double end combination power pump and shear, with or without motor attached, d.c., 12-in. throat, 12-in. blade capacity, 1 x 1-in. punch.

Workmen are engaged in clearing away the debris resulting from a fire which destroyed several buildings of the Midwest Foundry Co., Galesburg, Ill. It is expected that plans for reconstruction will be completed soon.

The P. H. Weber Co., Hoopeston, Ill., manufacturer of automobile accessories, has moved its plant and offices to Racine, Wis., where it will occupy a part of the plant of the former Racine-Sattley Wagon & Carriage Works.

A receiver's sale of buildings and equipment of the Illinois Thresher Co., 320 Park Avenue, Sycamore, Ill., will be held on Monday, July 12, at 10 a. m. There are factory buildings with floor space totaling 57,000 sq. ft. and a considerable number of machine tools and wood-working machines.

Plans are being completed by the Central States Portland Cement Co., care of the Cowham Engineering Co., 111 West Monroe Street, Chicago, recently organized, for its proposed new mill at La Salle, Ill., where about 150 acres of limestone and clay lands have been secured. Work will begin soon on initial units, to include a power house and machine shop. The entire project is estimated to cost close to \$2,000,000. The Cowham Engineering Co. is engineer, in charge. John L. Senior is president.

The American Public Service Co., 72 West Adams Street, Chicago, operating electric light and power properties in Texas and Oklahoma, is disposing of a bond issue of \$3,000,000, a considerable portion of the fund to be used for extensions in power plants and systems. Martin J. Insull is president.

The Burlington Milling Co., Burlington, Colo., is reported

to be planning the construction of a new flour mill on site recently acquired, to cost in excess of \$75,000 with machinery.

The Austin Heating Co., Austin, Minn., is considering preliminary plans for a new steam power plant for heating service, to cost close to \$75,000 with equipment. F. S. Schlender is president.

The Roth Mfg. Co., 1600-44 Kilbourn Avenue, Chicago, manufacturer of automobile parts and equipment, has awarded a general contract to George P. Cullen, 2940 West Lake Street, for its one-story plant at Cicero, Ill., 80 x 140 ft., to cost \$50,000 with equipment. Solon Reilly, 5 North La Salle Street, is architect.

The O. W. Buss Co., Minneapolis, Minn., manufacturer of steel sash and kindred products, has leased the building at 2938 Pillsbury Avenue for the establishment of a new plant. Heretofore the company has been handling production under contract with local metal-working plants and in the future will manufacture entirely for its own requirements.

The Tide Water Oil Sales Co., 1445 West Thirty-seventh Street, Chicago, has plans for a new three-story storage and distributing plant, 90 x 93 ft., estimated to cost \$65,000 with equipment. A. Epstein, 2001 Pershing Road, is architect and engineer.

The W. Glader Co., 210 North Ann Street, Chicago, manufacturer of machinery and parts, has filed plans for a two-story shop addition, 50 x 102 ft., to cost about \$25,000 with equipment. F. E. Davidson, 3 Dearborn Street, is architect.

The Goodman Mfg. Co., 4834 Halsted Street, Chicago, manufacturer of electric locomotives, mining machinery, etc., has awarded a general contract to the Adams Construction Co., 217 North Clarkson Street, for its proposed addition, to be equipped for heat-treating, as a pattern shop, and for other service; a portion to be reserved for storage and distributing. It will cost about \$125,000 with equipment. L. E. Ritter, 140 South Dearborn Street, is architect. C. H. Strawbridge is president.

The Board of Education, 629 Third Street, Des Moines, Iowa, contemplates the installation of manual training equipment in its proposed two-story and basement junior high school on Center Street, estimated to cost \$400,000. Bids will be asked soon on a general contract. Proudfoot, Rawson & Souers, Hubbell Building, are architects.

South Atlantic States

BALTIMORE, June 28.

THE A. Weiskittel & Son Co., Twelfth and East Lombard Streets, Baltimore, manufacturer of stoves, stove castings, etc., is completing plans for a three-story addition, 150 x 280 ft., reported to cost \$185,000 with equipment. It will be used in part for storage and distributing service.

The Board of Awards, office of the City Register, City Hall, Baltimore, will receive bids until July 7 for furnishing, delivering and installing machinery for the various industrial arts shops of junior high school No. 70, including tools, supplies, etc., as well as laboratory apparatus. John H. Roche is secretary of the Board of School Commissioners.

The Sunshine Products Co., Inc., P. O. Box 63, Greensboro, N. C., manufacturer of soap powders, etc., has inquiries out for mechanical conveyors and kindred equipment for handling loose materials and package goods. Paul P. Moore is secretary.

Levenson & Zenitz, Howard and Ostend Streets, Baltimore, manufacturers of furniture, have plans for a two-story top addition to their factory, 60 x 130 ft., to cost about \$75,000 with equipment. J. R. Freund, 1307 St. Paul Street, is architect. Samuel Levenson is head.

The Common Council, Highland, N. C., has secured permission to construct a municipal hydroelectric power plant on the Cullasagee River, Macon County. Plans will soon be arranged.

Fire, June 24, damaged a portion of the south foundry at the plant of the Lobdell Car Wheel Co., C Street, Wilmington, Del., with loss reported at \$13,000. The structure will be rebuilt.

The Dorchester Lumber Co., Badham, S. C., is arranging for the early rebuilding of the portion of its mill recently destroyed by fire. The new structure will be one story, 65 x 150 ft., with installation to include high-speed cylinders, planers, motors, fan and blower system, etc., with dry kiln trucks and auxiliary apparatus. Purchases of equipment will be made at once. The complete project is expected to cost about \$75,000.

The Goodyear Tire & Rubber Co., Akron, Ohio, is said to be planning the construction of a 2000 hp. steam-electric power plant at its proposed mill addition at Cedartown, Ga. Lockwood, Greene & Co., Healy Building, Atlanta, Ga., are architects and engineers.

The Victor Cooler Door Co., Hagerstown, Md., recently organized with a capital of \$250,000 by Raymond J. Funkhouser, Hagerstown, and associates, plans the operation of a local plant for the manufacture of refrigerating equipment, ice chutes and kindred products. Aaron M. Horst and Herbert H. Jennings, both of Hagerstown, are also interested in the new company.

The Board of Commissioners, District of Columbia, District Building, Washington, is asking bids until July 7 for 1500 water meters for the municipal water bureau; until July 6 for 150,000 lb. pig lead.

The Southern Enterprise Fireworks, Inc., Clinton, N. C., recently organized, is completing plans for the establishment of a new plant and is in the market for necessary equipment. T. B. Smith is secretary, in charge.

Power equipment, transmission apparatus, conveying and other machinery will be installed in the proposed one and two-story laundry, 40 x 90 ft., and 20 x 40 ft., to be constructed by the Baltimore Laundry Co., Lombard and Fifth Streets, Baltimore, estimated to cost \$100,000. William and Louis Horst are heads.

The Cordele Sash, Door & Lumber Co., Cordele, Ga., W. L. Robuck, head, has tentative plans for the construction of a new lumber and saw mill with initial capacity of about 60,000 ft. per day, to cost \$100,000 with machinery.

The Common Council, Louisa, Va., will install two electrically-operated pumping units, each with capacity of 100 gal. per min., in connection with a proposed municipal waterworks. A 75,000-gal. steel tank and tower will also be required. The entire project will cost about \$35,000. The J. B. McCrary Engineering Co., Citizens' & Savings Bank Building, Atlanta, Ga., is engineer.

The LaGrange Iron Works, LaGrange, Ga., has asked bids on a general contract for rebuilding the portion of its plant recently destroyed by fire, to include a new foundry and machine shop. List of equipment to be installed has been arranged. L. C. Schaudies is president.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has been inquiring for an automatic band saw grinder, to handle saws about 7 in. wide, with tooth space 1½ in.

The Board of Education, Mount Holly, N. C., contemplates the installation of manual training equipment in its proposed new two-story high school to cost about \$100,000.

The Board of Education, Wilmington, Del., is considering the use of public school No. 1 for the proposed local trade and vocational school, and will soon secure estimates of cost for necessary equipment.

R. P. Johnson, Wytheville, Va., machinery dealer, has been inquiring for a locomotive type boiler, 20 to 35 hp., complete with accessories; also for machinery for a chair factory.

The Common Council, Homerville, Ga., is considering the installation of pumping machinery in connection with a municipal waterworks and sewage plant to cost \$40,000. Bonds have been voted.

Ground has been broken for a warehouse at the plant of the Rome Stove & Range Co. The addition is expected to increase the capacity of the plant 50 per cent or more. Officers of the company are John M. Berry, president; A. F. Selman, secretary-treasurer, and H. F. Hanson, vice-president and general superintendent.

The Atlanta, Birmingham & Atlantic Railroad, Atlanta, Ga., has been sold under foreclosure proceedings to a reorganization committee of the bond-holders. The purchase price was \$4,500,000.

Indiana

INDIANAPOLIS, June 28.

ARRANGEMENTS are being completed by the Iceola Corporation, Dayton, Ohio, manufacturer of automatic electric refrigerating equipment, for the removal of its plant to Indianapolis. The company has acquired the plant formerly used by the Schwartz Electric Co., Speedway City district, which will be remodeled and provides a total of 35,000 sq. ft. of floor space. It is purposed to provide additional equipment for increase in output over the Dayton works, and to construct two additional units to triple approximately the former capacity. The company was organized recently with a capital of \$500,000, taking over the plant and business of the Valley Engineering Co., Dayton. W. N. Thompson, formerly president of the Stutz Motor Car Co., Indianapolis, is president, and A. J. Parry, formerly vice-president of the Martin-Parry Co., York, Pa., manufacturer of commercial truck bodies, secretary and treasurer.

The Citizens' Gas Co., Majestic Building, Indianapolis, has completed plans for a one-story sulphate plant addition, 67 x 95 ft., at its Prospect gas works for by-products service.

A one-story pumping station will also be built. The entire project will cost about \$75,000.

John Owen, receiver for the Steinbrenner Rubber Co., Noblesville, Ind., has applied for permission to resume production at the plant, now idle for more than a year. It is purposed to manufacture automobile tires. Machinery will be reconditioned and necessary replacements made.

The Central States Envelope Co., East Washington Street and Sherman Drive, Indianapolis, will soon take bids for a two-story addition, 80 x 150 ft., to cost about \$50,000 with equipment. Harrison & Turnock, Board of Trade Building, are architects.

Fire, June 17, destroyed a portion of the artificial gas-manufacturing plant of the Southern Indiana Gas & Electric Co., at Evansville, Ind., with loss reported at \$100,000 including equipment. It is planned to rebuild. Headquarters are at Evansville.

The Indiana Excelsior Co., Bethel Avenue and the Belt Railroad, Indianapolis, plans to rebuild the portion of its works, including baling plant, destroyed by fire June 21. An official estimate of loss has not been announced but reported in excess of \$25,000. J. T. Shimer is president and B. D. Shimer, treasurer.

The Barber Mfg. Co., Anderson, Ind., soon will start the erection of an addition, 200 x 400 ft. to its bed spring plant.

The Lincoln Brass Foundry, 911 North Wilbur Street, South Bend, Ind., will move its plant to Mishawaka, Ind., in the factory formerly occupied by the Werra Aluminum Co.

Gulf States

BIRMINGHAM, June 28.

THE Celotex Co., 645 North Michigan Boulevard, Chicago, manufacturer of wallboard and insulating products from sugar cane waste, will proceed with the construction of proposed additions to its plant at Marerro, near New Orleans. The expansion will consist of two one-story mill units with machinery for an additional output of 300,000 ft. per day. The company is disposing of a note issue of \$1,000,000, the fund to be used for the expansion. C. F. Dahlberg is vice-president.

The Texas Central Power Co., Frost Building, San Antonio, Tex., has tentative plans for extensions and improvements in its steam-operated electric power house at Crystal City, Tex., to include the installation of additional equipment.

The San Antonio Ice Rink Co., 516 West Myrtle Street, San Antonio, Tex., plans the installation of ice-making and refrigerating machinery in a proposed addition to its plant reported to cost in excess of \$200,000. George Willis, Builders' Exchange Building, is architect.

The Phillips Petroleum Co., Bartlesville, Okla., has applied for permission to make extensions in its casinghead gasoline plant near Amarillo, Tex., to include the installation of air compressors and other equipment.

The Sherman Concrete Pipe Co., Burwell Building, Knoxville, Tenn., has acquired about 5 acres at Venice, Fla., and contemplates the construction of a new branch plant, including division for the production of cement specialties, to cost about \$50,000 with equipment.

The Townsend Sash, Door & Lumber Co., Lake Wales, Fla., is in the market for shears or other equipment for cutting steel reinforcing rods, steel angles, I-beams and other structural shapes, either power or hand-operated.

The Common Council, Muleshoe, Tex., is considering the installation of pumping equipment in connection with a proposed municipal water system to cost \$40,000. Montgomery & Ward, Harvey-Snyder Building, Wichita Falls, Tex., are consulting engineers.

The Caddo-DeSoto Oil Mill Co., Inc., Natchez, Miss., care of the Natchez Association of Commerce, is considering plans for a new cottonseed oil mill, to cost about \$250,000 including machinery. It is expected to begin work early in the fall.

The Texas-Louisiana Power Co., Houston, Tex., has acquired the electric light and power plant of the Farmersville Mill & Light Co., Farmersville, Tex., and plans extensions and improvements in this section, including transmission line construction. The company is disposing of a preferred stock issue, a considerable portion of the proceeds to be used for expansion in Texas, Oklahoma, New Mexico and Louisiana, and the installation of additional equipment. A. P. Barrett is president.

The Phoenix Portland Cement Co., Birmingham, has awarded a general contract to the Smallman-Brice Construction Co., 1115 Avenue E, for the erection of a four-story unit at its mill site at Powderly, Ala., 40 x 50 ft. Other buildings will soon be constructed.

Fire, June 17, destroyed a portion of the plant of the American Tar & Turpentine Co., Broad Street and Howard

Avenue, New Orleans, with loss reported in excess of \$300,000 including equipment. It is planned to rebuild.

The Pierce Electric Co., 1314 DeSoto Street, Tampa, Fla., will erect a three-story equipment storage and distributing plant, with repair facilities, estimated to cost \$75,000. J. F. Pierce is president.

The Pure Process Ice Co., Tuscaloosa, Ala., has begun the erection of an addition to its ice-manufacturing plant to double the present capacity, to cost in excess of \$35,000.

The Port Commission, New Orleans, has authorized plans for the early construction of a new double-deck coffee warehouse and distributing terminal at Poydras Street and the river front, to replace a wharf destroyed by fire several months ago. Conveying, hoisting and other handling equipment will be installed, as well as motorized hauling machinery and trucks. The entire project is estimated to cost \$1,250,000.

The Presidio Mining Co., Shafter, Tex., is reported to be planning the construction of a new cyanide mill for the handling and treating of silver ore. It will be designed for an initial daily capacity of 300 tons, and cost in excess of \$250,000 with machinery.

In connection with extensions and improvements in the municipal waterworks at Houston, Tex., to cost about \$500,000, the Board of Water Commissioners, James H. B. House, chairman, contemplates the construction of a new central pumping plant to cost approximately \$110,000 with machinery. J. C. McVea is city engineer.

The Kimbell Milling Co., 1900 South Main Street, Fort Worth, Tex., has taken out a permit to build a third unit at its grain elevator, with capacity of 400,000 bu., bringing the entire mill capacity to 1,400,000 bu. It will cost in excess of \$75,000 with equipment.

The Jacobs Mfg. Co., Bridgeport, Ala., has been inquiring for grinding wheels, stands and kindred equipment. E. R. Jacobs is head.

St. Louis

ST. LOUIS, June 28.

PLANs are being prepared by the Missouri Pacific Railroad Co., Railway Exchange Building, St. Louis, for a one-story addition to its engine house and machine repair shops at Nevada, Mo., to cost close to \$100,000 with equipment. E. A. Hadley is chief engineer.

The Platte County Co-Operative Wheat Elevator Association, Tracy, Mo., has tentative plans for the rebuilding of the portion of its grain elevator destroyed by fire June 20, with loss estimated at \$60,000 including equipment.

The Board of Education, Topeka, Kan., is considering the installation of manual training equipment in its proposed two-story and basement North Side junior high school, estimated to cost \$160,000. T. W. Williamson & Co., Central National Bank Building, are architects.

The Bell Oil & Gas Co., Tulsa, Okla., has authorized an expansion and improvement program at its oil refinery at Grandfield, Okla., to include the installation of additional cracking equipment with ultimate capacity of 3500 bbl. per day and extensions in the oil refining and tank divisions. The entire project is estimated to cost \$500,000.

The Polar Wave Ice & Fuel Co., Olive Street, St. Louis, will erect a new one-story ice-manufacturing and refrigerating plant, 80 x 105 ft., to cost about \$75,000 with equipment. H. C. Clymer, Wainwright Building, is architect.

The City Council, Kirkwood, Mo., has called a special election on July 11, to approve a bond issue of \$50,000, the proceeds to be used for extensions and improvements in the municipal electric light and power plant and the installation of additional equipment.

The Oklahoma Steel Casting Co., Tulsa, Okla., has work under way on enlargements and improvements in its plant. It is purposed to install additional equipment to increase the output about 50 per cent.

The Common Council, Seymour, Mo., contemplates the installation of pumping equipment in connection with proposed extensions in the municipal waterworks, for which a bond issue is being arranged.

The Board of Education, Hastings, Neb., has plans for a one-story manual arts building, 125 x 220 ft., estimated to cost \$75,000. K. H. Gedney & Co., Second and Kansas Streets, Hastings, are engineers.

The American Insulation Co., Roberts and Stokely Streets, Philadelphia, manufacturer of electrical and other insulation projects, has acquired a 30-acre tract at St. Louis, and is reported planning a branch factory to cost in excess of \$100,000.

The Common Council, Stillwater, Okla., plans the installation of pumping equipment in connection with a proposed municipal waterworks, estimated to cost \$40,000.

The City Council, Kansas City, Kan., has plans for the construction of a new steam power house in connection with a proposed electric light and power station, the entire cost aggregating \$750,000. The installation will include boilers of 1500 hp. capacity, fuel economizers, steam turbine-driven pumps, motor-driven pumping machinery and auxiliary equipment. The ultimate plant will have a rating of 100,000 kw., and is estimated to cost in excess of \$5,000,000. A. L. Mullergren, Board of Trade Building, Kansas City, Mo., is engineer.

Frank Casbeer, 1020 East Eighteenth Street, Tulsa, Okla., and associates have plans for a five-story and basement automobile service, repair and garage building, to cost \$200,000 with equipment.

The Cape Girardeau Foundry Co., 2940 Easton Avenue, St. Louis, has been incorporated with capital stock of \$50,000 and is operating a gray iron foundry at Cape Girardeau, Mo. It has purchased considerable new equipment and will continue to add to this from time to time. Joseph Desloge is president and E. C. Breck is secretary and general manager.

The Auto Theft Signal Lock Co., St. Joseph, Mo., has been organized and has taken over the assets of the Coy Auto Theft Manifold Lock Co., also at St. Joseph. It is having its locks, which are for automobile use, manufactured on contract. E. M. Shores is president.

Cleveland

CLEVELAND, June 28.

MACHINE tool sales in this district during June will show about the same volume as in May. However, sales by a few manufacturers and dealers who shared in some of the business recently placed by the automotive industry in Detroit will show a gain over last month. The Chevrolet Motor Co. has purchased about all the heavy equipment required in its plant extension program, but has not yet bought all of the lighter equipment it will need. It has covered for part of its gear hobber requirements, which will probably aggregate 35 to 50 machines. The Cleveland Planer Co. booked an order the past few days from the National Production Co., Detroit, for a 48-in. planer and another Detroit order for a 30-in. planer. Dealers report a fair volume of inquiry, mostly for single machines.

Recent orders for foundry equipment taken by the W. W. Sly Mfg. Co., Cleveland, include a sandblast room, dust arrester and other equipment for the American Body Corporation, Buffalo, sandblast room, dust arrester and sandblast equipment for the Koken Co., St. Louis, dust arresting equipment for the Oakland Motor Car Co., Pontiac, Mich., and two tumbling mills for the Wolverine Bumper & Specialty Co., Grand Rapids, Mich.

The Davis Machinery Exchange, 1612 Oakwood Avenue, Toledo, Ohio, has purchased the equipment of the Bryan Machine Co., Bryan, Ohio, and advises that a list of the machinery for sale is now available.

The H. K. Ferguson Co., Cleveland, has the contract for a building, 161 x 171 ft., to be erected for the United States Cast Iron Pipe & Foundry Co. at Scottsdale, Pa. It will be used for a coating plant.

The Stardant Novelty Co., Kenmore, Ohio, will take bids shortly for a factory.

The Alloy Cast Steel Co., Marion, Ohio, has been incorporated with a capital stock of 12,500 shares of no par value and has purchased the electric steel foundry of the Fairbanks Steam Shovel Co. It is stated that the plant will be overhauled and the capacity increased.

Pittsburgh

PITTSBURGH, June 28.

EARL H. OVERHOLZER, Ridgway, Pa., connected with the Ridgway Dynamo & Engine Co., for a number of years past, has acquired the plant and business of the Ridgway Mfg. Co., operating general machine shops and foundry, and will take possession at once. The company will be continued in the same line, including the manufacture of boilers, piping, etc. Tentative plans are under advisement for enlargements.

Fire, June 21, destroyed the two-story service, repair and garage building of the Cook Motor Co., Rowes Run, near Uniontown, Pa., with loss reported in excess of \$65,000 including equipment. It is proposed to rebuild.

The Clarion River Power Co., Clarion, Pa., has applied to the War Department for permission to proceed with the construction of two power dams on the Clarion River for proposed hydroelectric generating stations. One dam is to be located near Foxburg, and the other in the vicinity of Clarion.

The Adamston Flat Glass Co., Clarksburg, W. Va., recently organized by H. B. Curtin, 624 Mulberry Street, Clarksburg, and associates, with capital of \$250,000, has acquired the plant of the Clarksburg Glass Co., affiliated with the Pittsburgh Plate Glass Co., Pittsburgh, at Adamston, W. Va. Plans have been arranged for extensions.

Fire, June 23, destroyed a portion of the plant of the Pennsylvania Glass Sand Co., Berkeley Springs, W. Va., including pulverizing works, with loss reported at \$100,000 including equipment. Plans for rebuilding are under advisement. Headquarters are at Lewistown, Pa.

The Guyan Machine Shops, Logan, W. Va., machinery dealers, have been making inquiries for a horizontal boring mill, with table approximately 20 x 30 in.; also for a number of industrial motors, a.c. and d.c., 5 to 20 hp., 1200 r.p.m., 220 volts for a.c. circuit, and 250 volts, d.c., circuit.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has awarded contract for its proposed four-story and basement factory branch and distributing branch at Mansfield, Ohio, to cost close to \$500,000 including equipment.

The Pennsylvania Power Co., Ellwood City, Pa., operated by the Pennsylvania-Ohio Power & Light Co., Youngstown, Ohio, has applied for permission to take over and consolidate 19 electric light and power utilities in Mercer, Lawrence, Beaver and other counties. It is proposed to make extensions in power stations and transmission lines.

The Norfolk & Western Railway Co., Roanoke, Va., is said to be arranging for the early construction of a new engine house at Williamson, W. Va., with repair facilities.

The Protane Corporation, 14 East Tenth Street, Erie, Pa., has recently increased the amount of its capital stock preparatory to expansion of its business. Definite plans will be announced later. A. W. Milne is president and G. B. Conrath, secretary and treasurer. The company manufactures domestic gas equipment.

Pacific Coast

SAN FRANCISCO, June 23.

TENTATIVE plans are being considered by the Republic Steel Package Co., Richmond, Cal., for rebuilding the portion of its plant destroyed by fire June 10, with loss reported at close to \$100,000 including machinery.

The Imperial Ice & Development Co., Imperial, Cal., has preliminary plans for a new one-story plant at Mexicali, Mexico, with initial capacity of 30 tons per day, to cost about \$50,000 with equipment.

The City Council, Park City, Utah, is considering the installation of pumping machinery in connection with a proposed municipal waterworks and sewage system estimated to cost \$100,000. Caldwell & Richards, Templeton Building, Salt Lake City, Utah, are consulting engineers.

The Rubber Products Co. of America, Inc., Los Angeles, W. H. Yetman, president, has awarded a general contract to George B. Thatcher, 5301 South Figueroa Street, for a new one and two-story plant, 65 x 225 ft., at Bates City, estimated to cost about \$45,000 with equipment.

Fire, June 17, destroyed a portion of the plant of the Steel Pipe & Tank Co., Fourth and Harrison Streets, Berkeley, Cal., with loss reported at \$50,000 including equipment. The pipe-dipping department was severely damaged. It is planned to rebuild.

The Northwestern Power & Light Co., Port Angeles, Wash., has secured permission to construct a hydroelectric power plant on the Elwha River, with estimated capacity of 8600 hp., to cost in excess of \$450,000 with power dam and transmission system.

The Orange County Ice Co., Fullerton, Cal., will soon begin the erection of a one-story plant, 66 x 110 ft., with an initial output of 30 tons per day. Hamm & Grant, Inc., Ferguson Building, Los Angeles, is architect and engineer.

The Mohawk Irrigation District, J. L. Terry, president, Yuma, Ariz., plans for the installation of a series of electrically-operated pumping plants in connection with a proposed irrigation project to cost \$500,000. A bond issue in this amount has been sold.

The California Cedar Products Co., Stockton, Cal., has authorized plans for rebuilding the portion of its plant recently destroyed by fire, including planing mill, pencil slab mill and other structures, with loss estimated at \$200,000 including machinery. W. B. Thurman is president and general manager.

The Los Angeles Railway Co., Pacific Electric Building, Los Angeles, has asked bids on a general contract for a one and two-story automobile and bus repair shop, with parts and assembling departments, 100 x 300 ft., estimated to cost \$80,000 with equipment. I. H. Seehorn is company architect.

A vocational shop will be constructed at the proposed one and two-story high school group to be erected at Richmond, Cal., by the Richmond High School District. The entire project will cost in excess of \$500,000. Bids will be asked on a general contract in July. Louis Stone, 357 Twelfth Street, Oakland, Cal., is architect.

The Northern California Canning Peach Growers Association, James M. Cremin, 800 G Street, Marysville, Cal., president, recently organized, plans the construction of a power house, machine shop and other mechanical buildings at its proposed plant in the Sacramento Valley district. The entire project will cost close to \$2,000,000. A can-manufacturing plant is said to be under advisement.

The Volz Engineering Equipment Co., 502 East Third Street, Los Angeles, which has been in existence three years, but the ownership of which changed hands last July, has recently been incorporated. The company manufactures the Volz steam separator and automatic lubricator and the Volz automatic feed water control, which are used in the oil industry. For the industrial field the company is manufacturing the Volz combination oil and gas carburetor. F. W. Libby is managing director.

The Fairy Lamp, 310 Broadway Arcade Building, Los Angeles, has been organized to manufacture ornamental lighting fixtures. It is occupying rental space and has no present intentions of building a plant. It is in the market for materials and equipment. The proprietor is M. Rachoff.

Milwaukee

MILWAUKEE, June 28.

SENTIMENT in the machine-tool trade continues to improve under the favorable influence of better inquiry and a greater inclination among users to place orders. June sales undoubtedly will exceed the April and May volume, although by no large margin. Builders of milling machines are keeping well sold up on orders, mainly for single items, from the automotive industries, railroads and electrical equipment industry.

The Mack International Motor Truck Corporation, New York, has placed the general contract with Bentley Brothers, 808 South Pierce Street, Milwaukee, for the construction of a sales and service headquarters building in Milwaukee, to cost \$300,000. It will be 190 x 425 ft., mainly one-story, and will contain a completely equipped machine shop of about 6000 sq. ft. Rodney Hallan is manager of the Milwaukee branch at 415 Prospect Avenue.

The R. H. Davis & Sons Co., Mauston, Wis., will build a new hydroelectric generating plant on the Lemonweir River at a cost of \$50,000. Construction bids will be taken about July 10 by L. A. DeGuere, consulting engineer, Wisconsin Rapids, Wis. Equipment contracts already placed are: Turbine, James Leffel Co., Springfield, Ohio; generator, Electrical Machinery Mfg. Co., Minneapolis. Charles K. Davis is general manager.

The Milwaukee Electric Railway & Light Co., 217 Sycamore Street, Milwaukee, has plans for a \$100,000 extension of its steam generating station at Oneida Street and Edison Avenue. George G. Post is chief electrical engineer, and John Anderson is vice-president in charge of power plants.

The Kelley Tool & Mfg. Co., LaCrosse, Wis., has been incorporated with \$30,000 capital stock to manufacture tools, dies, jigs, fixtures, mechanical appliances, etc. The principals are George W. Kelley, Albert N. Seielstad and Arthur W. Scharpf. Plans for manufacturing have not yet been given out.

The Zenith Foundry Co., Milwaukee, which took over on May 1 the plant of the West Allis Iron Works at Seventy-fifth Avenue and Elm Street, contemplates the erection of an addition to meet the pressure upon its existing capacity. Tentative plans are under consideration. W. R. Tanner is president.

The Screw Products Corporation of America, Taunton, Mass., wood screws, lag screws and auger bits, is offering, privately, preferred shares to raise additional working capital. Subscribers to the preferred shares are being given a bonus of common stock. George J. Coles, director of sales, is in charge of the offering. The company has patented a self-starting, single-point, double-thread wood screw.

Canada

TORONTO, June 28.

MACHINE tools sales the past week showed some improvement over those of the previous few days. Single tool buying is the chief feature of this market, but small lists are making their appearance from time to time. Demand on the part of the automotive industry has been resumed on a fairly strong basis and builders and dealers are deriving a considerable portion of their business from this source. Orders are chiefly for replacement, however, although good sized lists are expected soon from the General Motor Corporation of Canada for its large plant addition at Oshawa, Ont.

The Board of Education, Toronto, has issued a small list for technical school equipment, for which bids will be received until July 6 by W. W. Pearse, secretary-treasurer, 155 College Street. The list includes engine lathes, sheet metal machinery, grinding machine and other tools.

The Foundation Co. of Canada, Ltd., Medical Arts Building, Montreal, has been awarded general contract for the erection of a \$7,000,000 artificial silk manufacturing plant at Drummondville, Que., for the Canadian Cellulose, Ltd., Cumberland, Md.

The Mistassini Power & Paper Co., Mistassini, Que., will start work shortly on an \$8,000,000 mill in Saguenay County which will have a daily capacity of 200 tons of newsprint. E. A. Walberg, Toronto, is president of the company.

The Sherbrooke Land & Water Power Co., Sherbrooke, Que., is receiving estimates for the construction of a power plant. Trotter & Cate, Montreal, are engineers.

A building permit has been issued to the Consumers' Gas Co., 19 Toronto Street, Toronto, for the erection of condenser plant and engine house to cost \$85,000.

The Canadian Glass Products, Ltd., recently organized, has purchased the building formerly occupied by the Lion Mead Rubber Co., at Wrightville, Hull, Que., and will establish a sand pulverizing plant at a cost of approximately \$100,000. Edouard Brunet, 187 Water Street, has the contract.

Plans for the financing and building of a 200-ton mill on the property of the Sylvanite Gold Mines, Ltd., Kirkland Lake, Ont., have been completed and it is expected that bids will be called soon for the construction and equipment.

Dr. J. McCarthy, Sault Ste. Marie, Ont., announced that at a board meeting of the McCarthy-Webb Godreau Mines, held in Toronto recently, estimates were passed for approximately \$25,000, covering the outlay for equipment necessary for the further development of the company's property. B. R. Gordon is engineer.

Western Canada

The Western Steel Products Co., Calgary, Alta., will build an addition to its plant to cost \$15,000. The Bennett & White Construction Co., Calgary, has the general contract.

The City Council, Edmonton, Alta., is contemplating spending \$275,000 on a new unit for the local power plant. D. Mitchell is commissioner.

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Bids will be received by W. W. Davidson, mayor, Moose Jaw, Sask., until Aug. 16, for one 5000-kw. steam turbo-generator and one surface condenser. Plans and specifications are with J. D. Peters, electrical superintendent, Moose Jaw.

Foreign

BIDS are being asked by the Public Works Supplies and Tenders Board, Wellington, New Zealand, until Sept. 28, for a proposed pumping station and complete equipment, including three motor-driven pumps.

The American Consulate, Durango, Mexico, David D. J. Myers, consul, has information relative to a proposed hydro-electric power project in the vicinity of Otinapa Station, Durango, to supplement a present steam-operated generating station at Walterio, now furnishing service for mines at La Noria.

The Acciaierie Elettriche Cogne-Girod, Aosta, Italy, H. de Styczynski, engineer, is inquiring for a machine for cold stamping progressive numbers, letters and trademarks on steel rounds and squares in sizes from 5 to 150 mm.

The Municipal Government, Antwerp, Belgium, in co-operation with the local Societe Commerciale des Potasses d'Alsace, is contemplating the construction of a storage and distributing plant for potash salts, consisting of two units with capacity of 100,000 tons of material. A complete mechanical plant will be installed with facilities for handling about 500 tons of fertilizer materials per hour.

The Victorian Railways Commissioners, Melbourne, Australia, are asking bids until Sept. 1, for automatic switching equipment for the Elwood substation. Specifications on file at the office of the Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, Washington, reference No. Australia 210974.

The Standard Oil Co., 26 Broadway, New York, has begun an expansion and improvement program at its oil storage and distributing plant at Iwalei, Honolulu, estimated to cost \$200,000. The project will include the installation of additional tanks and mechanical equipment; the construction of a new dock on the Kalihi Channel, with unloading, conveying and kindred handling equipment.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (S-3317) from a company at Paris desirous of getting in touch with American manufacturers of machinery for molding aluminum under pressure.

The French headquarters of Etablissements Driver-Harris, makers of metals and alloys, in wire, ribbon, sheet and cable form for electric resistance work, have been moved from 1 Rue Taitbout, Paris, to 25 Rue du Bois de Boulogne, Neuilly-sur-Seine, France.

German Steel Works Loan

Dillon, Read & Co. head a syndicate offering \$30,000,000 of 6½ per cent gold bonds of the United Steel Works Corporation of Germany. This is said to be the largest foreign industrial loan so far arranged in the United States. The bonds mature in 25 years and are priced at 96 and accrued interest, to yield about 6.83 per cent. The corporation, which was organized in Germany, is acquiring with the proceeds of this loan four leading companies—Rheinische Union, Thyssen & Co., Phoenix, A. G., and Rheinische Stahlwerke. The corporation also is acquiring 56 per cent of the stock of the Alpine-Montan Steel Corporation, the largest operating unit in Austria, and owner of one of the largest deposits of high-grade iron ore in the world. The opening balance sheet of the new corporation shows total assets of more than \$350,000,000. Current assets are \$86,799,000, against current liabilities of \$16,629,504. The corporation will rank as the largest industrial unit in Germany.

Annual report of the American Car & Foundry Co. for the fiscal year ended April 30 shows net earnings after renewals, replacements and repairs of \$6,102,898. Out of this, dividends were paid aggregating \$5,700,000. Total surplus, April 30, was \$41,245,296. Current assets are listed at \$55,841,857, of which inventories account for \$12,498,024. Current liabilities at \$14,959,101 and reserve accounts at \$12,632,799, in conjunction with the current assets, result in a working capital, excluding reserves, of \$28,249,957. Property and plant account stands at \$72,995,339. Total assets are \$128,837,196.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)



HOW often do we turn hopefully to a business "forecast" for light on the future, only to end up more in the dark than ever. For so many professional seers into the future of business obscure their predictions with ifs, buts, perhapses, unlessees, and kindred cautious qualifiers that they are really mystifiers

rather than clarifiers.

To quote from a letter received the other day from a Detroit manufacturer:

The average business analysis is a joke. The authors of most of them are so inclined to play safe on their forecasts that the reader cannot form any definite conclusions whatever, and reading most of them simply adds to the confusion which already exists in the reader's mind.

The italics are ours. But read on:

Your Dr. Lewis Haney's Business Analysis and Forecast is worth several times the price of subscription, and is one of the most important of the good points of your journal. I am sure all of your subscribers appreciate your efforts in securing the services of Dr. Haney.

The italics are not ours.

PAUL swings a mighty shovel. The Bethlehem Steel Corporation has awarded a medal to Paul Dobeles, employed in its Dakota mine in West Virginia, for loading 538 tons of coal in twelve working days. This averages 45 tons, or one full-sized coal car, per day.

A few thousand Pauls, unaided, could very nearly break the English coal strike.

A. H. D.



IF there were fewer farms, the price of farm products would be higher, and the higher returns would go far toward solving the agricultural problem.

For the past several years profits have been nothing to brag about in the gray iron foundry industry. Faced with a shrinking demand, this industry has been declining in number of units and in aggregate capacity. Supply is adjusting itself to demand, a painful but economically necessary process.

What mirth would greet a demand by the gray iron foundrymen for Government aid!



THE song of the "saturation pointer" is stilled and the parking problem lament resounds throughout the land. Twenty million motor vehicles are now running around these United States. About 1.5 million cars were scrapped last year; the factories turned out 4.3 million new ones, of which roughly a half million were exported.

It is estimated that the scrap pile will claim almost two million cars this year, or 10 per cent of the total in use. The replacement demand is growing lustily.